SEQUENCE LISTING

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<120> PURIFIED AND ISOLATED POTASSIUM-CHLORIDE COTRANSPORTER NUCLEIC ACIDS AND POLYPEPTIDES AND THERAPEUTIC AND SCREENING METHODS USING SAME

<130> Attorney Docket No. 1242-26-2

<140>
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<170> PatentIn Ver. 2.1

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Gly Gly Gly Asp Glu Thr Ala Glu Arg Thr Glu Ala Pro Gly Thr Pro
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Glu Gly Pro Glu Pro Glu Arg Pro Ser Pro Gly Asp Gly Asn Pro Arg
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Phe Glu Gly Lys Asn Met Ala Leu Phe Glu Glu Glu Met Asp Ser Asn
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ccc atg gtg tcc tcg ctg ntc aac aag ctg gcc aac tac acc aac ctg    289
Pro Met Val Ser Ser Leu Xaa Asn Lys Leu Ala Asn Tyr Thr Asn Leu
80              85                  90                  95

agc cag ggc gtg gtg gag cac gag gag gac gag gag agc cgg cgg cgg    337
Ser Gln Gly Val Val Glu His Glu Glu Asp Glu Glu Ser Arg Arg Arg
                100                 105                 110

gag gcc aag gct ccg cgc atg ggc acc ttc atc ggc gtc tac ctg ccg    385
Glu Ala Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr Leu Pro
            115                 120                 125

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Cys Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu Thr Trp
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atc gtg ggg gtg gct ggt gtc ctg gag tcc ttc ctc atc gtg gcc atg    481
Ile Val Gly Val Ala Gly Val Leu Glu Ser Phe Leu Ile Val Ala Met
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tgc tgc aca tgt aca atg ctg acc gcc att tcc atg agt gcg atc gct    529
Cys Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala
160                 165                 170                 175

acc aac ggt gtg gtc cca gct ggc ggg tcc tac tac atg ata tcg cgc    577
Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg
                180                 185                 190

tcg ctg gga ccc gag ttt gga ggc gct gtc ggc ctc tgc ttc tac ctg    625
Ser Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu
            195                 200                 205

ggc acg acg ttt gca ggg gcc atg tat att ttg ggg acc atc gag att    673
Gly Thr Thr Phe Ala Gly Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile
            210                 215                 220

ttt ctg acg tac atc tcc ccg ggt gcg gcc atc ttc cag gcg gag gct    721
Phe Leu Thr Tyr Ile Ser Pro Gly Ala Ala Ile Phe Gln Ala Glu Ala
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gca ggt ggc gag gcg gcc gcc atg ctg cac aac atg cgt gtg tac ggc    769
Ala Gly Gly Glu Ala Ala Ala Met Leu His Asn Met Arg Val Tyr Gly
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acg tgc acg ctc gtg ctc atg gcc ctg gtg gtc ttc gtg ggc gtc aag    817
Thr Cys Thr Leu Val Leu Met Ala Leu Val Val Phe Val Gly Val Lys
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Tyr Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val Leu Ser
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atc ctg gcc atc tat gcc ggc gtc atc aag tct gcc ttc gac ccc ccg      913
Ile Leu Ala Ile Tyr Ala Gly Val Ile Lys Ser Ala Phe Asp Pro Pro
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gac atc ccg gtc tgc ctc ctg ggg aac cgc acg ctg tca cgg cgc agc      961
Asp Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ser Arg Arg Ser
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Phe Asp Ala Cys Val Lys Ala Tyr Gly Ile His Asn Asn Ser Ala Thr
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tgt gac gag tac ttc atc cag aac aac gtc acc gaa atc cag ggc atc     1105
Cys Asp Glu Tyr Phe Ile Gln Asn Asn Val Thr Glu Ile Gln Gly Ile
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ccg ggc gcg gcc agt ggt gtc ttc ctg gag aac ctg tgg agt acg tac     1153
Pro Gly Ala Ala Ser Gly Val Phe Leu Glu Asn Leu Trp Ser Thr Tyr
        370                 375                 380

gcg cac gcg ggg gcg ttt gtg gag aag aaa ggt gtg ccc tcg gtg ccc     1201
Ala His Ala Gly Ala Phe Val Glu Lys Lys Gly Val Pro Ser Val Pro
        385                 390                 395

gtg gca gag gag agc cgt gcc agc aca ctg ccc tac gtg ctc acc gac     1249
Val Ala Glu Glu Ser Arg Ala Ser Thr Leu Pro Tyr Val Leu Thr Asp
400                 405                 410                 415

atc gcg gcc tcc ttc acc ctg ctg gtt ggc atc tac ttc cct tcc gtg     1297
Ile Ala Ala Ser Phe Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val
                420                 425                 430

acc ggt atc atg gcg ggt tca aac cgg tcc ggg gac ctc aag gat gca     1345
Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala
                435                 440                 445

cag aag tcc atc ccc acg ggg acc atc ctg gcc ata gtg acg acg tct     1393
Gln Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr Thr Ser
        450                 455                 460

ttc atc tat ctc tcc tgc att gtg ctg ttt ggg gcc tgc att gaa ggc     1441
Phe Ile Tyr Leu Ser Cys Ile Val Leu Phe Gly Ala Cys Ile Glu Gly
465                 470                 475

gtg gtc tta cga gat aag ttc ggg gag gcc ctg cag ggg aac ctg gtc     1489
Val Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn Leu Val
480                 485                 490                 495
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ttc ttc tcc acc tgc ggt gcc ggc ctg cag acc ctc acg ggg gca ccg    1585
Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Thr Leu Thr Gly Ala Pro
            515                 520                 525

cgc cta ctg cag gcc att gcc cgt gac ggc atc gtc ccc ttc ctg cag    1633
Arg Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Val Pro Phe Leu Gln
            530                 535                 540

gtg ttt ggc cac ggg aag gcc aac ggg gag ccc acg tgg gcg ctg ctg    1681
Val Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu
            545                 550                 555

ctg aca gtc ctc atc tgc gag act ggc atc ctc atc gcc tct ctg gac    1729
Leu Thr Val Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser Leu Asp
560                 565                 570                 575

agc gtg gcc ccg atc ctc tcc atg ttc ttc ctc atg tgc tac ctg ttc    1777
Ser Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe
            580                 585                 590

gtg aac ctg gcc tgc gcc gtg cag acc ctg cta cgt acc ccc aac tgg    1825
Val Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp
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cgt cca cgc ttc aag ttc tac cac tgg acc ctg tcc ttt ctg ggt atg    1873
Arg Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu Gly Met
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agc ctg tgc ctg gcg ctg atg ttc atc tgc tcc tgg tac tac gcg ctg    1921
Ser Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu
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tcc gcc atg ctc atc gct ggc tgc atc tac aag tac atc gag tac cgc    1969
Ser Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu Tyr Arg
640                 645                 650                 655

ggg gcc gag aag gag tgg ggc gat ggc atc cgt ggc cta tcc ctg aac    2017
Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Asn
            660                 665                 670

gcc gcc cgc tac gcc ctg ctg cgc gtg gag cac ggt ccc ccc cac acc    2065
Ala Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro His Thr
            675                 680                 685

aag aac tgg agg ccc cag gtg ctg gtg atg ctg aac ctg gac gcg gag    2113
Lys Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp Ala Glu
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cag gcc gtg aag cac ccc cgc ctg ctg tcc ttc acg tcg cag ctg aag    2161
Gln Ala Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln Leu Lys
705                 710                 715
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Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly Thr Tyr
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ctg gac aag cac atg gag gct cag cgg gcc gag gag aac ata cgg tcc      2257
Leu Asp Lys His Met Glu Ala Gln Arg Ala Glu Glu Asn Ile Arg Ser
            740             745                 750

cta atg agc aca gag aag acc aag ggc ttc tgc cag ctg gtg gtc tcg      2305
Leu Met Ser Thr Glu Lys Thr Lys Gly Phe Cys Gln Leu Val Val Ser
            755             760             765

tcc agc ctg cgg gat ggc atg tcc cac ctg atc cag tcg gcc ggc ctg      2353
Ser Ser Leu Arg Asp Gly Met Ser His Leu Ile Gln Ser Ala Gly Leu
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ggc ggc ctg aag cac aac acg gtg ctc atg gcc tgg ccc gca tcc tgg      2401
Gly Gly Leu Lys His Asn Thr Val Leu Met Ala Trp Pro Ala Ser Trp
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aag cag gag gac aac ccc ttc tcc tgg aag aac ttt gta gac acc gtc      2449
Lys Gln Glu Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp Thr Val
800             805             810             815

cgc gac acc acc gcc gcg cac cag gct ctg ctg gtg gcc aag aac gtc      2497
Arg Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys Asn Val
            820             825             830

gac tcg ttt ccg caa aac cag gag cgc ttc ggc ggg ggc cac atc gac      2545
Asp Ser Phe Pro Gln Asn Gln Glu Arg Phe Gly Gly Gly His Ile Asp
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gtg tgg tgg atc gtg cac gac ggc ggc atg ctc atg ctg ctg ccc ttc      2593
Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe
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ctg ctg cgc cag cac aag gtg tgg agg aag tgc cgg atg cgt atc ttc      2641
Leu Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg Ile Phe
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acc gtg gcc cag gtg gac gac aac agc atc cag atg aag aag gac ctg      2689
Thr Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu
880             885             890             895

cag atg ttc ttg tat cac ttg cgc atc agc gcc gag gtg gag gtg gtg      2737
Gln Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu Val Val
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gag atg gtt gaa aac gac ata tct gct ttc acc tac gag agg aca cta      2785
Glu Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Arg Thr Leu
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atg atg gag cag agg tcg cag atg ctg aag cag atg cag ctg tcc aag      2833
Met Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu Ser Lys
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tcc cac acc gcg gcg gca gcc agg acc caa gcg ccg cct acg cca gac    2929
Ser His Thr Ala Ala Ala Ala Arg Thr Gln Ala Pro Pro Thr Pro Asp
960             965             970             975

aag gtg cag atg acc tgg acc agg gag aag ctg atc gct gag aag tac    2977
Lys Val Gln Met Thr Trp Thr Arg Glu Lys Leu Ile Ala Glu Lys Tyr
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agg agc aga gac acc agc cta tcc ggt ttc aaa gac ctc ttc agc atg    3025
Arg Ser Arg Asp Thr Ser Leu Ser Gly Phe Lys Asp Leu Phe Ser Met
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aag ccg gac cag tcc aac gtc agg cgg atg cac acg gct gtg aag ctc    3073
Lys Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu
        1010            1015            1020

aat ggc gtc gtc ntc aac aag tcc cag gat gcg cag ctg gtc ctg ctc    3121
Asn Gly Val Val Xaa Asn Lys Ser Gln Asp Ala Gln Leu Val Leu Leu
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aac atg cca ggt cct ccc aaa aac cgg cag gga gac gag aac tac atg    3169
Asn Met Pro Gly Pro Pro Lys Asn Arg Gln Gly Asp Glu Asn Tyr Met
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Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu Leu Val
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agg ggt ggc ggc cgg gag gtg atc acc atc tac tcc taatgcccaa        3263
Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
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              35   40   45

Asn Ser Pro Phe Xaa Asn Asn Val Glu Val Glu Gln Glu Ser Phe Phe
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Glu Gly Lys Asn Met Ala Leu Phe Glu Glu Glu Met Asp Ser Asn Pro
 65   70   75   80

Met Val Ser Ser Leu Xaa Asn Lys Leu Ala Asn Tyr Thr Asn Leu Ser
                85   90   95

Gln Gly Val Val Glu His Glu Glu Asp Glu Glu Ser Arg Arg Arg Glu
            100   105   110

Ala Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr Leu Pro Cys
        115   120   125

Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Ile
    130   135   140

Val Gly Val Ala Gly Val Leu Glu Ser Phe Leu Ile Val Ala Met Cys
145   150   155   160

Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr
            165   170   175

Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser
            180   185   190

Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly
        195   200   205

Thr Thr Phe Ala Gly Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Phe
    210   215   220

Leu Thr Tyr Ile Ser Pro Gly Ala Ala Ile Phe Gln Ala Glu Ala Ala
225   230   235   240

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Cys Thr Leu Val Leu Met Ala Leu Val Val Phe Val Gly Val Lys Tyr
        260             265                 270

Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val Leu Ser Ile
        275             280                 285

Leu Ala Ile Tyr Ala Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asp
    290             295                 300

Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ser Arg Arg Ser Phe
305             310                 315                 320

Asp Ala Cys Val Lys Ala Tyr Gly Ile His Asn Asn Ser Ala Thr Ser
            325             330                 335

Ala Leu Trp Gly Leu Phe Cys Asn Gly Ser Gln Pro Ser Ala Ala Cys
            340             345                 350

Asp Glu Tyr Phe Ile Gln Asn Asn Val Thr Glu Ile Gln Gly Ile Pro
        355             360                 365

Gly Ala Ala Ser Gly Val Phe Leu Glu Asn Leu Trp Ser Thr Tyr Ala
    370             375                 380

His Ala Gly Ala Phe Val Glu Lys Lys Gly Val Pro Ser Val Pro Val
385             390                 395                 400

Ala Glu Glu Ser Arg Ala Ser Thr Leu Pro Tyr Val Leu Thr Asp Ile
            405             410                 415

Ala Ala Ser Phe Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr
        420             425                 430

Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln
        435             440                 445

Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr Thr Ser Phe
    450             455                 460

Ile Tyr Leu Ser Cys Ile Val Leu Phe Gly Ala Cys Ile Glu Gly Val
465             470                 475                 480

Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn Leu Val Ile
            485             490                 495

Gly Met Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe
        500             505                 510

Phe Ser Thr Cys Gly Ala Gly Leu Gln Thr Leu Thr Gly Ala Pro Arg
        515             520                 525

Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Val Pro Phe Leu Gln Val
    530             535                 540
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Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu
545   550   555   560

Thr Val Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser Leu Asp Ser
                565   570   575

Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val
            580   585   590

Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg
        595   600   605

Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser
    610   615   620

Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Ser
625   630   635   640

Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly
            645   650   655

Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Asn Ala
        660   665   670

Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro His Thr Lys
    675   680   685

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690   695   700

Ala Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln Leu Lys Ala
705   710   715   720

Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly Thr Tyr Leu
            725   730   735

Asp Lys His Met Glu Ala Gln Arg Ala Glu Glu Asn Ile Arg Ser Leu
        740   745   750

Met Ser Thr Glu Lys Thr Lys Gly Phe Cys Gln Leu Val Val Ser Ser
        755   760   765

Ser Leu Arg Asp Gly Met Ser His Leu Ile Gln Ser Ala Gly Leu Gly
    770   775   780

Gly Leu Lys His Asn Thr Val Leu Met Ala Trp Pro Ala Ser Trp Lys
785   790   795   800

Gln Glu Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp Thr Val Arg
            805   810   815

Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys Asn Val Asp
        820   825   830

Ser Phe Pro Gln Asn Gln Glu Arg Phe Gly Gly Gly His Ile Asp Val
        835   840   845

Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu
850   855   860

Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg Ile Phe Thr
865   870   875   880

Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Gln
                885   890   895

Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu Val Val Glu
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Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Arg Thr Leu Met
        915   920   925

Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu Ser Lys Asn
        930   935   940

Glu Gln Glu Arg Glu Ala Gln Leu Ile His Asp Arg Asn Thr Ala Ser
945   950   955   960

His Thr Ala Ala Ala Ala Arg Thr Gln Ala Pro Pro Thr Pro Asp Lys
                965   970   975

Val Gln Met Thr Trp Thr Arg Glu Lys Leu Ile Ala Glu Lys Tyr Arg
        980   985   990

Ser Arg Asp Thr Ser Leu Ser Gly Phe Lys Asp Leu Phe Ser Met Lys
        995   1000   1005

Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn
    1010   1015   1020

Gly Val Val Xaa Asn Lys Ser Gln Asp Ala Gln Leu Val Leu Leu Asn
1025   1030   1035   1040

Met Pro Gly Pro Pro Lys Asn Arg Gln Gly Asp Glu Asn Tyr Met Glu
            1045   1050   1055

Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu Leu Val Arg
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Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
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tttgcgaggt tccccccact tttttgttc ttaaaaagaa caaa atg cat cct cca 176
                                                Met His Pro Pro
                                                1

gaa acc acc acc aag atg gct tca gtt cgg ttc atg gtg aca ccg aca 224
Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met Val Thr Pro Thr
 5   10   15   20

aag atc gat gac att cca ggt ttg tca gac acc agt ccg gac ntc agc 272
Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser Pro Asp Xaa Ser
             25   30   35

tct cga tct agt tcc cga gta aga ttt agc tcc cgg gaa agc gtg cct 320
Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg Glu Ser Val Pro
             40   45   50

gaa aca agc cgg agt gag cct atg agt gag atg tct ggg gcc acc act 368
Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser Gly Ala Thr Thr
             55   60   65

tcg ctg gca act gtt gca ctg gat cca ccc agt gac cgg act tct cac 416
Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp Arg Thr Ser His
     70   75   80

ccc cag gat gtc atc gag gac gac gga cat aag aaa gct cga aat gct 464
Pro Gln Asp Val Ile Glu Asp Asp Gly His Lys Lys Ala Arg Asn Ala
 85   90   95   100

tat ctc aat aat tcc aat tat gaa gaa gga gat gaa tat ttt gat aaa 512
Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr Phe Asp Lys
             105   110   115

aat ttg gca ctc ttt gag gaa gaa atg gac acc aga ccg aag gtg tct 560
Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro Lys Val Ser
             120   125   130

tcc ctc ctc aac cgc atg gcc aat tac act aat ctg act caa gga gca 608
Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr Gln Gly Ala
         135   140   145

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aag gaa cat gaa gag gca gaa aac atc act gaa ggg aaa aag aag ccc    656
Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys Lys Lys Pro
    150                 155                 160

acc aag acc ccc caa atg ggt acc ttc atg ggt gtc tac ctc cca tgt    704
Thr Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys
165                 170                 175                 180

cta caa aat att ttt gga gtg atc ctt ttt tta cgc ctt aca tgg gtg    752
Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val
                185                 190                 195

gtg ggc aca gct gga gtt ctt cag gct ttt gca att gtc ctt atc tgc    800
Val Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile Val Leu Ile Cys
                200                 205                 210

tgc tgc tgt aca atg ttg act gct atc tcc atg agt gcc att gcc act    848
Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr
                215                 220                 225

aat gga gtg gtg cca gct ggg ggc tca tac ttt atg att tcc cgg gca    896
Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile Ser Arg Ala
    230                 235                 240

ctg ggc cca gag ttt ggt ggg gct gtt ggc ctc tgc ttt tat ctt ggt    944
Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly
245                 250                 255                 260

acc aca ttt gca gca gcc atg tac atc ctt ggt gcc att gaa atc ttt    992
Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile Glu Ile Phe
                265                 270                 275

ctg gtc tat atc gtc ccc cga gct gcc atc ttt cac agt gat gac gca   1040
Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His Ser Asp Asp Ala
                280                 285                 290

ctc aag gaa tca gca gcc atg cta aat aac atg cgt gtc tac ggc aca   1088
Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr
                295                 300                 305

gct ttc ttg gtc ctt atg gta tta gtg gta ttt atc ggc gta cgc tat   1136
Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly Val Arg Tyr
    310                 315                 320

gtg aac aag ttt gcc tca ctt ttc ctg gcc tgt gtc att gtg tcc atc   1184
Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val Ile Val Ser Ile
325                 330                 335                 340

ttg gcc atc tat gct gga gcc atc aag tct tct ttt gct cct cca cac   1232
Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala Pro Pro His
                345                 350                 355

ttc ccg gtc tgc atg ctg ggt aac cgc act ctt tca tca aga cac att   1280
Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser Arg His Ile
                360                 365                 370
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gac gtt tgc tct aag acc aag gaa att aac aac atg aca gtc cca tca    1328
Asp Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met Thr Val Pro Ser
        375             380             385

aag tta tgg gga ttc ttc tgt aac tcg agt caa ttt ttc aat gcc acc    1376
Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe Asn Ala Thr
        390             395             400

tgt gat gaa tac ttt gtt cac aat aac gtc act tca atc cag ggc att    1424
Cys Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser Ile Gln Gly Ile
405             410             415             420

cct gga ttg gct agt ggt ata att aca gag aat ctt tgg agt aat tac    1472
Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp Ser Asn Tyr
                425             430             435

cta ccc aag gga gag atc atc gaa aag cct tca gcc aaa tct tct gat    1520
Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys Ser Ser Asp
            440             445             450

gtc tta ggc agc tta aac cat gaa tat gtt ctt gtt gac atc acc acc    1568
Val Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val Asp Ile Thr Thr
            455             460             465

tcc ttc acg ntt ctg gtg gga atc ttc ttt ccc tct gtt aca ggt atc    1616
Ser Phe Thr Xaa Leu Val Gly Ile Phe Phe Pro Ser Val Thr Gly Ile
        470             475             480

atg gct gga tca aac aga tct gga gat ctg aaa gat gct cag aag tct    1664
Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln Lys Ser
485             490             495             500

att ccg att ggt act atc ctt gcc atc ctg acc acc tcc ttt gtt tat    1712
Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser Phe Val Tyr
                505             510             515

tta agc aat gtt gtc ctt ttt ggt gca tgt att gaa ggg gtt gtt ctc    1760
Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu
                520             525             530

aga gac aag ttc ggt gat gct gtg aaa ggt aat ttg gtg gta ggc acc    1808
Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val Val Gly Thr
            535             540             545

tta tct tgg cca tcc cca tgg gtg att gtt att ggc tcc ttc ttt tca    1856
Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser
        550             555             560

aca tgt ggg gct gga ctt cag agc ctc aca ggt gca ccg agg ctg cta    1904
Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu
565             570             575             580

caa gct att gcc aag gat aac atc ata ccg ttt ctg agg gtt ttt ggc    1952
Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg Val Phe Gly
                585             590             595
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cac agc aaa gcc aat ggg gaa cct acc tgg gct tta ctt cta act gct    2000
His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala
        600             605             610

gcc att gca gag ctt gga ata ctc att gcc tcc ctg gat ctt gtg gcc    2048
Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp Leu Val Ala
        615             620             625

cca att ctt tcc atg ttt ttt ctc atg tgt tac ctc ttt gta aac ttg    2096
Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val Asn Leu
        630             635             640

gca tgt gcc ttg caa aca tta ctt cga aca ccc aac tgg aga ccc cga    2144
Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg
645             650             655             660

ttc cgc tac tac cat tgg gcc ctt tct ttc atg gga atg agt atc tgt    2192
Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met Ser Ile Cys
            665             670             675

ctg gct ctg atg ttc att tct tcc tgg tat tat gcc att gta gcc atg    2240
Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile Val Ala Met
        680             685             690

gta ata gct ggt atg atc tac aag tac att gaa tac caa gga gct gag    2288
Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln Gly Ala Glu
        695             700             705

aaa gaa tgg ggt gat ggt atc cgt ggg ctg tcc ctc agt gca gcc cgg    2336
Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg
        710             715             720

ttt gct ttg ctt cga ttg gag gaa gga cct cca cac act aaa aac tgg    2384
Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp
725             730             735             740

agg cct cag ttg ctt gta tta ctg aaa cta gat gaa gac tta cat gtc    2432
Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp Leu His Val
            745             750             755

aag cat cct cgc ctc ctc acc ttt gcc tca cag ctc aaa gca gga aaa    2480
Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys Ala Gly Lys
            760             765             770

ggt ctc act att gtg ggc tct gtc atc gtg ggg aac ttc cta gag aac    2528
Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe Leu Glu Asn
        775             780             785

tac ggt gaa gct tta gct gct gag cag acc ata aag cac cta atg gag    2576
Tyr Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His Leu Met Glu
        790             795             800

gca gag aag gta aaa gga ttc tgc cag ctg gtg gtg gcc gcc aag ctg    2624
Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala Ala Lys Leu
805             810             815             820
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aga gag ggc att tcc cac ctc atc cag tca tgt ggc ctt ggg ggc atg    2672
Arg Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met
            825                 830                 835

aag cac aac acg gtg gtg atg ggc tgg cct aat ggc tgg cgt caa agc    2720
Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp Arg Gln Ser
            840                 845                 850

gaa gat gcc cgc gct tgg aag act ttt att ggc aca gtt cga gtg aca    2768
Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val Arg Val Thr
            855                 860                 865

act gct gcc cat ctt gca ctg ctg gtg gct aaa aac atc tcc ttc ttt    2816
Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile Ser Phe Phe
            870                 875                 880

ccc agc aat gtg gag caa ttt tct gag ggc aac att gat gtg tgg tgg    2864
Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp Val Trp Trp
885                 890                 895                 900

att gtg cat gat ggg ggg atg ctt atg cta cta cca ttc cta ctg aaa    2912
Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys
                905                 910     .           915

cag cac aag gtg tgg cga aag tgc agc ata cgg atc ttc aca gta gcc    ·2960·
Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe Thr Val Ala
            920                 925                 930

caa tta gaa gac aac agt atc caa atg aag aag gac cta gcc acc ttc    3008
Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe
            935                 940                 945

cta tat cac tta cgc att gag gcg gag gta gaa gtg gtg gag atg cat    3056
Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val Glu Met His
            950                 955                 960

gac agt gat ata tca gca tat act tac gag cgc act ttg atg atg gaa    3104
Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu
965                 970                 975                 980

caa agg tcc cag atg ctt cgg cac atg cgg cta tcc aaa aca gag cga    3152
Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg
                985                 990                 995

gac aga gag gca caa ttg gtg aaa gac cga aac tca atg cta cga ttg    3200
Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Leu Arg Leu
            1000                1005                1010

acc agc att ggc tct gat gag gac gaa gag aca gaa acc tat cag gag    3248
Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu
            1015                1020                1025

aag gtg cac atg act tgg aca aaa gac aag tac atg gca tcc cgg gga    3296
Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly
            1030                1035                1040
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caa aaa gcg aag tca atg gaa gga ttc cag gac ctg ctt aac atg cgt  3344
Gln Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg
1045            1050            1055            1060

ccg gac cag tcc aat gtg agg cgg atg cat aca gca gtg aaa ntc aac  3392
Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Xaa Asn
                1065            1070            1075

gag gtt ata gtt aac aag tcc cat gaa gca aag ctg gtt tta ttg aat  3440
Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn
            1080            1085            1090

atg cca ggg cca ccc cga aac cct gag ggt gat gaa aac tac atg gag  3488
Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu
            1095            1100            1105

ttc cta gag gtg ctt acc gag gga cta gag cga gtc cta ctt gtc cgg  3536
Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg
        1110            1115            1120

ggt ggt ggc agt gaa gtg atc acc att tat tca taacctactc tgaatgaccg 3589
Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
1125            1130            1135

tgcttgacct gttttcttaa aaggcctacg tcctccatgg aagtgccagc tcattactac 3649

cactcccact caactagaag cctgtgttct gtacacatca tactgaactc ttgatgagct 3709

gagcctcaag tacctgtgta aaagagctcc catctgatct gcagtcatta cagaaaaagc 3769

aaatattccc tcaacatcag aacaatgctc aagtctttca agccactgtc tgagcagtca 3829

aaggcaaatt agaattaaca agctgagcca ataaatgaat tggtaaaagg gatgctagaa 3889

attcaactga agaaaaaaag caagtcaagt acgtattcag cattaaagat gaatctcaga 3949

agtcatggtt caatgttgac actgtgagga tacactagag acagcttcat cttactaaag 4009

aatttatggt caagtatatt tggacctatt atcctcggca agccaagatg caaacatttt 4069

ttagctatat ttctttagta tacccactgc tgtaatttta tattaggata ctaacttgaa 4129

acatggctgc agcctctact tcttcaaaaa catcccccca aaataccaga tttaaatatc 4189

caaaaaaaaa aaaaaaaaaa aaaaa                                       4215


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Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser
            20   25   30

Pro Asp Xaa Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg
            35   40   45

Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser
        50   55   60

Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp
65   70   75   80

Arg Thr Ser His Pro Gln Asp Val Ile Glu Asp Asp Gly His Lys Lys
                85   90   95

Ala Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu
            100   105   110

Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg
        115   120   125

Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu
    130   135   140

Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly
145   150   155   160

Lys Lys Lys Pro Thr Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val
                165   170   175

Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg
            180   185   190

Leu Thr Trp Val Val Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile
            195   200   205

Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser
    210   215   220

Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met
225   230   235   240

Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys
                245   250   255

Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala
            260   265   270

Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His
        275   280   285

Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg
    290   295   300

Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile
305   310   315   320

Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val
            325   330   335

Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe
            340   345   350

Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser
        355   360   365

Ser Arg His Ile Asp Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met
    370   375   380

Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe
385   390   395   400

Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser
            405   410   415

Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu
            420   425   430

Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala
    435   440   445

Lys Ser Ser Asp Val Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val
    450   455   460

Asp Ile Thr Thr Ser Phe Thr Xaa Leu Val Gly Ile Phe Phe Pro Ser
465   470   475   480

Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp
            485   490   495

Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr
        500   505   510

Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu
    515   520   525

Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu
    530   535   540

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Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly
545             550             555                     560

Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala
            565             570                 575

Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu
        580             585                 590

Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu
        595             600             605

Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu
    610             615                 620

Asp Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu
625             630             635                     640

Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn
            645             650                     655

Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly
        660             665                 670

Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala
        675             680                 685

Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr
    690             695                 700

Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu
705             710             715                     720

Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His
            725             730                 735

Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu
            740             745                 750

Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu
        755             760             765

Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn
770             775             780

Phe Leu Glu Asn Tyr Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys
785             790             795                     800

His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val
            805             810                 815

Ala Ala Lys Leu Arg Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly
        820             825                 830

Leu Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly
        835             840                 845
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Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr
850   855   860

Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn
865   870   875   880

Ile Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile
            885   890   895

Asp Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro
            900   905   910

Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile
            915   920   925

Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp
    930   935   940

Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val
945   950   955   960

Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr
            965   970   975

Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser
            980   985   990

Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser
            995   1000   1005

Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu
    1010   1015   1020

Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met
1025   1030   1035   1040

Ala Ser Arg Gly Gln Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu
            1045   1050   1055

Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala
            1060   1065   1070

Val Lys Xaa Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu
            1075   1080   1085

Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu
    1090   1095   1100

Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val
1105   1110   1115   1120

Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
            1125   1130   1135

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aaa atg cat cca cca gaa gcc acc acc aag atg tcc tca gtt cgg ttc      48
    Met His Pro Pro Glu Ala Thr Thr Lys Met Ser Ser Val Arg Phe
     1               5                  10                  15

atg gtg aca cca act aag att gat gac att cca ggt ttg tca gac acc      96
Met Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr
                 20                  25                  30

agc ccg gac ctc agc tct cgg tct agt tct cga gta aga ttt agc tcc     144
Ser Pro Asp Leu Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser
             35                  40                  45

cga gaa agt gtg cca gaa aca agc cgt agt gag cct atg agc gaa ctg     192
Arg Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu
         50                  55                  60

tct ggg gct act act tct ctg gca act gtt gcc cta gat cct tcc agt     240
Ser Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser
     65                  70                  75

gac cgg act tct aat ccc cag gat gtt acg gag gat gac ggc cat aaa     288
Asp Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Asp Gly His Lys
 80                  85                  90                  95

aaa gcc cga aat gct tat ntc aat aat tcc aac tat gaa gaa gga gac     336
Lys Ala Arg Asn Ala Tyr Xaa Asn Asn Ser Asn Tyr Glu Glu Gly Asp
                100                 105                 110

gaa tat ttt gat aaa aat ttg gca ctc ttt gag gaa gaa atg gac acc     384
Glu Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr
                115                 120                 125
```

```
aga cca aag gtg tct tct ctc ctc aac cgc atg gcc aac tat aca aat    432
Arg Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn
        130             135             140

ctg aca caa gga gca aag gaa cat gaa gag gca gag aac atc act gaa    480
Leu Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu
        145             150             155

ggg aaa aag aag cct acc aag agc ccc caa atg ggt act ttc atg ggt    528
Gly Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly
160             165             170             175

gtc tac ctc cca tgt cta cag aac atc ttt gga gtg atc ctc ttc ctg    576
Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu
                180             185             190

cgt ctt acc tgg gta gtg gga aca gct gga atc ctt cag gcc ttt gca    624
Arg Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala
                195             200             205

att gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc atc tcc atg    672
Ile Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met
            210             215             220

agc gcc atc gcc act aac gga gtg gtg cca gct ggg ggc tca tac ttc    720
Ser Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe
        225             230             235

atg att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct gta ggc ctc    768
Met Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu
240             245             250             255

tgc ttt tat ctt ggc acc aca ttt gca gca gcc atg tat att ctt ggt    816
Cys Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly
                260             265             270

gcc att gaa atc ttt ctg gta tac att gtc ccc cga gct gcc atc ttt    864
Ala Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe
                275             280             285

cgg agt gac gat gca ctc aag gag tca gca gct atg ctg aac aac atg    912
Arg Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met
        290             295             300

cgc gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg gtg gta ttc    960
Arg Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe
        305             310             315

atc ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc ctg gcc tgt    1008
Ile Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys
320             325             330             335

gta att gtg tcg atc ttg gct atc tat gct ggt gcc atc aag tct tcc    1056
Val Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser
            340             345             350
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ttt gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac cgt acc ctg    1104
Phe Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu
            355                 360                 365

tca tca aga cac ctt gac att tgc tct aag acc aag gag gtt gac aac    1152
Ser Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn
            370                 375                 380

atg aca gta cca tca aag tta tgg gga ttc ttc tgc aac tcg agt cag    1200
Met Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln
385                 390                 395

ttc ttt aat gcc acc tgt gat gag tac ttt gtt cac aat aac gtc atc    1248
Phe Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile
400                 405                 410                 415

tca atc caa ggc att cca ggg ttg gct agt ggt atc att act gaa aat    1296
Ser Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn
                420                 425                 430

ctt tgg agt aat tat tta cca aag ggt gag ata att gaa aag cca tca    1344
Leu Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser
            435                 440                 445

gcc aag tca tct gat gtc tta ggc aac tta aac cat gaa tat gtt ctt    1392
Ala Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu
            450                 455                 460

gct gat atc acc acc tcc ttc act ctg ctg gtg ggg atc ttc ttt ccc    1440
Ala Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro
465                 470                 475

tcg gtc aca ggt atc atg gct ggg tca aac aga tct gga gat ctg aaa    1488
Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys
480                 485                 490                 495

gat gcc cag aag tct att ccc att ggg acc atc ctt gcc atc ctg acc    1536
Asp Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr
                500                 505                 510

aca tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt gca tgt att    1584
Thr Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile
            515                 520                 525

gaa gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta aaa ggg aat    1632
Glu Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn
            530                 535                 540

ttg gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg atc gtt att    1680
Leu Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile
            545                 550                 555

ggc tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc ctc aca ggt    1728
Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly
560                 565                 570                 575
```

```
gcg cct cgg ctg ctg cag gct atc gcc aag gat aac atc ata cct ttc    1776
Ala Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe
            580             585             590

ctt agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct acc tgg gct    1824
Leu Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala
            595             600             605

tta ctt cta act gct gcc ata gca gag ctg gga att ctc atc gcc tcc    1872
Leu Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser
            610             615             620

ctg gat ctc gtg gcc cca att ntt tcc atg ttt ttt ctc atg tgt tac    1920
Leu Asp Leu Val Ala Pro Ile Xaa Ser Met Phe Phe Leu Met Cys Tyr
    625             630             635

ctc ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg cga acc ccc    1968
Leu Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro
640             645             650             655

aac tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc tct ttc atg    2016
Asn Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met
                660             665             670

gga atg agt atc tgt cta gct ctg atg ttc att tct tct tgg tat tat    2064
Gly Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr
                675             680             685

gcc att gta gct atg gta ata gct ggc atg atc tac aag tac att gaa    2112
Ala Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu
            690             695             700

tat caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt ggg ctg tcg    2160
Tyr Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser
    705             710             715

ctc agt gca gcc cgc ttc gct ttg ctc cgt cta gag gaa gga cct cct    2208
Leu Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro
720             725             730             735

cac act aaa aac tgg agg cct cag ctg ctc gtc cta ctg aag ctg gat    2256
His Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp
                740             745             750

gaa gat tta cac gtc aag cac cct cgc ctc ctc acc ttt gcc tcc cag    2304
Glu Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln
            755             760             765

ctc aag gca gga aag gga ctc acg att gtg ggc tct gtc atc gtg ggg    2352
Leu Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly
        770             775             780

aac ttc ttg gag aac tat ggt gac gcg ctc gcg gca gag cag acc att    2400
Asn Phe Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile
    785             790             795
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aag cac cta atg gag gca gaa aag gta aaa gga ttc tgc caa ttg gtg   2448
Lys His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val
800             805             810             815

gtg gct gcc aag ctg aaa gag ggc att tca cac ctc atc cag tcc tgt   2496
Val Ala Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys
            820             825             830

ggc ctc gga ggc atg aaa cac aac aca gtg gtg atg ggc tgg ccc aat   2544
Gly Leu Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn
            835             840             845

ggc tgg cgt cag agt gaa gat gct cgc gct tgg aag act ttc att ggc   2592
Gly Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly
            850             855             860

aca gta cga gtg aca act gct gcc cat cta gcc ctg ctg gtg gct aaa   2640
Thr Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys
            865             870             875

aat gtc tcc ttc ttt ccc agc aat gtg gag cag ttt tct gag ggc aac   2688
Asn Val Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn
880             885             890             895

att gat gtg cgg tgg att gtg cat gat ggg ggc atg ctc atg cta tta   2736
Ile Asp Val Arg Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu
            900             905             910

ccg ttc ctg ctg aaa cag cac aag gtt tgg cgg aaa tgc agc ata cgg   2784
Pro Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg
            915             920             925

atc ttc aca gta gcc caa cta gaa gac aac agt atc cag atg aag aag   2832
Ile Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys
            930             935             940

gat ctg gcc acc ttt ctg tac cac ctg cgc att gag gca gaa gtg gaa   2880
Asp Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu
945             950             955

gtg gtg gag atg cac gac agt gac ata tct gcc tat aca tat gag cgc   2928
Val Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg
960             965             970             975

acc ctg atg atg gag cag agg tcc cag atg ctt cgg cat atg cgg ctg   2976
Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu
            980             985             990

tcc aaa aca gag cga gac agg gag gca cag ctg gtg aaa gat cga aac   3024
Ser Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn
            995             1000            1005

tca atg cta cgc ttg acc agc att ggc tct gat gag gac gaa gag aca   3072
Ser Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr
            1010            1015            1020
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gaa acg tac cag gag aag gtg cac atg act tgg acc aag gat aaa tac   3120
Glu Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr
    1025   1030   1035

atg gca tcc cgg ggg caa aag gtc aag tca atg gaa gga ttc cag gac   3168
Met Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp
1040   1045   1050   1055

cta ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg atg cat aca   3216
Leu Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr
                1060   1065   1070

gca gtg aag ctc aat gaa gtt ata gtc aac aag tct cat gaa gca aag   3264
Ala Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys
                1075   1080   1085

ctg gtt ttg ttg aat atg cca gga cca ccc cgg aac cct gaa ggt gat   3312
Leu Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp
            1090   1095   1100

gaa aac tac atg gaa ttt cta gaa gtg ntc act gag gga tta gaa cga   3360
Glu Asn Tyr Met Glu Phe Leu Glu Val Xaa Thr Glu Gly Leu Glu Arg
    1105   1110   1115

gtc ctt ctt gtc cgg ggt ggt ggc agt gag gtc atc acc att tac tca   3408
Val Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
1120   1125   1130   1135

taatcagctg tgggagattc tgcgtggtcc gacttcccta agactcatcg tccatggaga 3468

tgatagctct ttcctaccac tcccactcta ttcttgcaga gctgagcccc atctatgctc 3528

ttggctgcaa catgatctgc catcccagca gaaacaaata atccctcaac agaagaatgg 3588

tcaagtccta aaagctattt ctatggcagg agaaggcaag tcaaaattaa caagctaagc 3648

caaagggaac cttttggcac acagaaggta atgagttagt aaaacatatg ctagaaatgt 3708

aactggcaac agaaagcaat gttcatatct aacattcagg acgagtttca gaagacacgg 3768

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aggaaatact tgtgtaagat cagatttttt tttttttttt aatttactga tcacaaacac 4668

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Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser
             20   25   30

Pro Asp Leu Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg
         35   40   45

Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu Ser
     50   55   60

Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser Asp
 65   70   75   80

Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Asp Gly His Lys Lys
                 85   90   95

Ala Arg Asn Ala Tyr Xaa Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu
             100   105   110

Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg
         115   120   125

Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu
     130   135   140

Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly
145   150   155   160

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Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly Val
            165             170             175

Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg
            180             185             190

Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala Ile
            195             200             205

Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser
    210             215             220

Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met
225             230             235             240

Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys
            245             250             255

Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala
            260             265             270

Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe Arg
            275             280             285

Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg
290             295             300

Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile
305             310             315             320

Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val
            325             330             335

Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe
            340             345             350

Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser
            355             360             365

Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn Met
370             375             380

Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe
385             390             395             400

Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile Ser
            405             410             415

Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu
            420             425             430

Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala
            435             440             445

Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu Ala
450             455             460
```

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Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser
465             470             475                         480

Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp
                485             490             495

Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr
            500             505             510

Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu
        515             520             525

Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu
    530             535             540

Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly
545             550             555             560

Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala
            565             570             575

Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu
        580             585             590

Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu
        595             600             605

Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu
    610             615             620

Asp Leu Val Ala Pro Ile Xaa Ser Met Phe Phe Leu Met Cys Tyr Leu
625             630             635             640

Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn
            645             650             655

Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly
        660             665             670

Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala
        675             680             685

Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr
    690             695             700

Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu
705             710             715             720

Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His
            725             730             735

Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu
        740             745             750

Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu
    755             760             765
```

Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn
    770   775   780

Phe Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile Lys
785   790   795   800

His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val
            805   810   815

Ala Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly
            820   825   830

Leu Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly
        835   840   845

Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr
    850   855   860

Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn
865   870   875   880

Val Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile
            885   890   895

Asp Val Arg Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro
        900   905   910

Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile
        915   920   925

Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp
    930   935   940

Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val
945   950   955   960

Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr
            965   970   975

Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser
        980   985   990

Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser
        995   1000   1005

Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu
    1010   1015   1020

Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met
1025   1030   1035   1040

Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu
            1045   1050   1055

Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala
            1060   1065   1070

```
Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu
        1075              1080              1085

Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu
        1090              1095              1100

Asn Tyr Met Glu Phe Leu Glu Val Xaa Thr Glu Gly Leu Glu Arg Val
1105              1110              1115              1120

Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
                1125              1130              1135

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aaa atg cat cca cca gaa gcc acc acc aag atg tcc tca gtt cgg ttc      48
    Met His Pro Pro Glu Ala Thr Thr Lys Met Ser Ser Val Arg Phe
      1               5                  10                  15

atg gtg aca cca act aag att gat gac att cca ggt ttg tca gac acc      96
Met Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr
                20                  25                  30

agc ccg gac ntc agc tct cgg tct agt tct cga gta aga ttt agc tcc     144
Ser Pro Asp Xaa Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser
                35                  40                  45

cga gaa agt gtg cca gaa aca agc cgt agt gag cct atg agc gaa ctg     192
Arg Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu
        50                  55                  60

tct ggg gct act act tct ctg gca act gtt gcc cta gat cct tcc agt     240
Ser Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser
      65                  70                  75
```

```
gac cgg act tct aat ccc cag gat gtt acg gag gac ccg agt cag aac    288
Asp Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Pro Ser Gln Asn
 80                  85                  90                  95

tcc atc aca ggg gag cac agc cag ctg tta gat gac ggc cat aaa aaa    336
Ser Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys
                    100                 105                 110

gcc cga aat gct tat ctc aat aat tcc aac tat gaa gaa gga gac gaa    384
Ala Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu
                115                 120                 125

tat ttt gat aaa aat ttg gca ctc ttt gag gaa gaa atg gac acc aga    432
Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg
            130                 135                 140

cca aag gtg tct tct ctc ctc aac cgc atg gcc aac tat aca aat ctg    480
Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu
        145                 150                 155

aca caa gga gca aag gaa cat gaa gag gca gag aac atc act gaa ggg    528
Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly
160                 165                 170                 175

aaa aag aag cct acc aag agc ccc caa atg ggt act ttc atg ggt gtc    576
Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly Val
                180                 185                 190

tac ctc cca tgt cta cag aac atc ttt gga gtg atc ctc ttc ctg cgt    624
Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg
            195                 200                 205

ctt acc tgg gta gtg gga aca gct gga atc ctt cag gcc ttt gca att    672
Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala Ile
            210                 215                 220

gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc atc tcc atg agc    720
Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser
        225                 230                 235

gcc atc gcc act aac gga gtg gtg cca gct ggg ggc tca tac ttc atg    768
Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met
240                 245                 250                 255

att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct gta ggc ctc tgc    816
Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys
                260                 265                 270

ttt tat ctt ggc acc aca ttt gca gca gcc atg tat att ctt ggt gcc    864
Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala
            275                 280                 285

att gaa atc ttt ctg gta tac att gtc ccc cga gct gcc atc ttt cgg    912
Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe Arg
            290                 295                 300
```

```
agt gac gat gca ntc aag gag tca gca gct atg ctg aac aac atg cgc    960
Ser Asp Asp Ala Xaa Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg
    305             310             315

gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg gtg gta ttc atc   1008
Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile
320             325             330             335

ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc ctg gcc tgt gta   1056
Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val
            340             345             350

att gtg tcg atc ttg gct atc tat gct ggt gcc atc aag tct tcc ttt   1104
Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe
            355             360             365

gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac cgt acc ctg tca   1152
Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser
        370             375             380

tca aga cac ctt gac att tgc tct aag acc aag gag gtt gac aac atg   1200
Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn Met
        385             390             395

aca gta cca tca aag tta tgg gga ttc ttc tgc aac tcg agt cag ttc   1248
Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe
400             405             410             415

ttt aat gcc acc tgt gat gag tac ttt gtt cac aat aac gtc atc tca   1296
Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile Ser
            420             425             430

atc caa ggc att cca ggg ttg gct agt ggt atc att act gaa aat ctt   1344
Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu
            435             440             445

tgg agt aat tat tta cca aag ggt gag ata att gaa aag cca tca gcc   1392
Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala
            450             455             460

aag tca tct gat gtc tta ggc aac tta aac cat gaa tat gtt ctt gct   1440
Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu Ala
        465             470             475

gat atc acc acc tcc ttc act ctg ctg gtg ggg atc ttc ttt ccc tcg   1488
Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser
480             485             490             495

gtc aca ggt atc atg gct ggg tca aac aga tct gga gat ctg aaa gat   1536
Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp
            500             505             510

gcc cag aag tct att ccc att ggg acc atc ctt gcc atc ctg acc aca   1584
Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr
        515             520             525
```

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tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt gca tgt att gaa    1632
Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu
        530             535             540

gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta aaa ggg aat ttg    1680
Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu
        545             550             555

gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg atc gtt att ggc    1728
Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly
560             565             570             575

tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc ctc aca ggt gcg    1776
Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala
            580             585             590

cct cgg ctg ctg cag gct atc gcc aag gat aac atc ata cct ttc ctt    1824
Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu
            595             600             605

agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct acc tgg gct tta    1872
Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu
            610             615             620

ctt cta act gct gcc ata gca gag ctg gga att ctc atc gcc tcc ctg    1920
Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu
        625             630             635

gat ctc gtg gcc cca att ctt tcc atg ttt ttt ctc atg tgt tac ctc    1968
Asp Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu
640             645             650             655

ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg cga acc ccc aac    2016
Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn
            660             665             670

tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc tct ttc atg gga    2064
Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly
            675             680             685

atg agt atc tgt cta gct ctg atg ttc att tct tct tgg tat tat gcc    2112
Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala
            690             695             700

att gta gct atg gta ata gct ggc atg atc tac aag tac att gaa tat    2160
Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr
        705             710             715

caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt ggg ctg tcg ctc    2208
Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu
720             725             730             735

agt gca gcc cgc ttc gct ttg ctc cgt cta gag gaa gga cct cct cac    2256
Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His
            740             745             750
```

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act aaa aac tgg agg cct cag ctg ctc gtc cta ctg aag ctg gat gaa    2304
Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu
        755                 760                 765

gat tta cac gtc aag cac cct cgc ctc ctc acc ttt gcc tcc cag ctc    2352
Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu
        770                 775                 780

aag gca gga aag gga ctc acg att gtg ggc tct gtc atc gtg ggg aac    2400
Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn
        785                 790                 795

ttc ttg gag aac tat ggt gac gcg ctc gcg gca gag cag acc att aag    2448
Phe Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile Lys
800                 805                 810                 815

cac cta atg gag gca gaa aag gta aaa gga ttc tgc caa ttg gtg gtg    2496
His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val
            820                 825                 830

gct gcc aag ctg aaa gag ggc att tca cac ctc atc cag tcc tgt ggc    2544
Ala Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly
            835                 840                 845

ntc gga ggc atg aaa cac aac aca gtg gtg atg ggc tgg ccc aat ggc    2592
Xaa Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly
        850                 855                 860

tgg cgt cag agt gaa gat gct cgc gct tgg aag act ttc att ggc aca    2640
Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr
        865                 870                 875

gta cga gtg aca act gct gcc cat cta gcc ctg ctg gtg gct aaa aat    2688
Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn
880                 885                 890                 895

gtc tcc ttc ttt ccc agc aat gtg gag cag ttt tct gag ggc aac att    2736
Val Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile
                900                 905                 910

gat gtg cgg tgg att gtg cat gat ggg ggc atg ctc atg cta tta ccg    2784
Asp Val Arg Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro
            915                 920                 925

ttc ctg ctg aaa cag cac aag gtt tgg cgg aaa tgc agc ata cgg atc    2832
Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile
            930                 935                 940

ttc aca gta gcc caa cta gaa gac aac agt atc cag atg aag aag gat    2880
Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp
            945                 950                 955

ctg gcc acc ttt ctg tac cac ctg cgc att gag gca gaa gtg gaa gtg    2928
Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val
960                 965                 970                 975
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```
gtg gag atg cac gac agt gac ata tct gcc tat aca tat gag cgc acc    2976
Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr
            980                 985                 990

ctg atg atg gag cag agg tcc cag atg ctt cgg cat atg cgg ctg tcc    3024
Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser
            995                1000                1005

aaa aca gag cga gac agg gag gca cag ctg gtg aaa gat cga aac tca    3072
Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser
           1010                1015                1020

atg cta cgc ttg acc agc att ggc tct gat gag gac gaa gag aca gaa    3120
Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu
           1025                1030                1035

acg tac cag gag aag gtg cac atg act tgg acc aag gat aaa tac atg    3168
Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met
1040                1045                1050                1055

gca tcc cgg ggg caa aag gtc aag tca atg gaa gga ttc cag gac cta    3216
Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu
                1060                1065                1070

ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg atg cat aca gca    3264
Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala
                1075                1080                1085

gtg aag ctc aat gaa gtt ata gtc aac aag tct cat gaa gca aag ctg    3312
Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu
           1090                1095                1100

gtt ttg ttg aat atg cca gga cca ccc cgg aac cct gaa ggt gat gaa    3360
Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu
           1105                1110                1115

aac tac atg gaa ttt cta gaa gtg ctc act gag gga tta gaa cga gtc    3408
Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val
1120                1125                1130                1135

ctt ctt gtc cgg ggt ggt ggc agt gag gtc atc acc att tac tca        3453
Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
                1140                1145                1150

taatcagctg tgggagattc tgcgtggtcc gacttcccta agactcatcg tccatggaga  3513

tgatagctct ttcctaccac tcccactcta ttcttgcaga gctgagcccc atctatgctc  3573

ttggctgcaa catgatctgc catcccagca gaaacaaata atccctcaac agaagaatgg  3633

tcaagtccta aaagctattt ctatggcagg agaaggcaag tcaaaattaa caagctaagc  3693

caaagggaac cttttggcac acagaaggta atgagttagt aaaacatatg ctagaaatgt  3753

aactggcaac agaaagcaat gttcatatct aacattcagg acgagtttca gaagacacgg  3813

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cattattttc aaaaaaaaaa aaaaaaa                                      6120
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Met His Pro Pro Glu Ala Thr Thr Lys Met Ser Ser Val Arg Phe Met
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Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser
             20                  25                  30

Pro Asp Leu Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg
         35                  40                  45

Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu Ser
     50                  55                  60

Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser Asp
 65                  70                  75                  80
```

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Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Pro Ser Gln Asn Ser
                85                    90              95

Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala
            100                 105                 110

Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr
        115                 120                 125

Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro
    130                 135                 140

Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr
145                 150                 155                 160

Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys
            165                 170                 175

Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly Val Tyr
            180                 185                 190

Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu
            195             200                 205

Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala Ile Val
    210                 215                 220

Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala
225                 230                 235                 240

Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile
            245                 250                 255

Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe
            260                 265                 270

Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile
        275                 280                 285

Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe Arg Ser
    290                 295                 300

Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val
305                 310                 315                 320

Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly
            325                 330                 335

Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val Ile
        340                 345                 350

Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala
        355                 360                 365

Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser
    370                 375                 380
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Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn Met Thr
385                 390             395                 400

Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe
                405             410                 415

Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile Ser Ile
                420             425             430

Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp
            435             440             445

Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys
    450             455             460

Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu Ala Asp
465             470             475             480

Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val
                485             490             495

Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala
            500             505             510

Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser
        515             520             525

Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly
    530             535             540

Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val
545             550             555             560

Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser
            565             570             575

Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro
            580             585             590

Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg
    595             600             605

Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu
    610             615             620

Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp
625             630             635             640

Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe
            645             650             655

Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp
            660             665             670

Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met
    675             680             685
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Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile
    690   695   700

Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln
705   710   715   720

Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser
            725   730   735

Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr
        740   745   750

Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp
        755   760   765

Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys
    770   775   780

Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe
785   790   795   800

Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile Lys His
            805   810   815

Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala
        820   825   830

Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu
        835   840   845

Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp
    850   855   860

Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val
865   870   875   880

Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Val
            885   890   895

Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp
        900   905   910

Val Arg Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe
        915   920   925

Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe
    930   935   940

Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu
945   950   955   960

Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val
            965   970   975

Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu
        980   985   990

```
Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys
        995                 1000                1005

Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met
        1010                1015                1020

Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr
1025                1030                1035                1040

Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala
                1045                1050                1055

Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu Leu
            1060                1065                1070

Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val
            1075                1080                1085

Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val
        1090                1095                1100

Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn
1105                1110                1115                1120

Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu
                1125                1130                1135

Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
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ttaaagcaag ggtctgtctg taagaaca atg ccg cac ttc act gtg acc aag      112
                             Met Pro His Phe Thr Val Thr Lys
                              1                   5


gta gaa gac cca gag gag ggg gca gct ggc ccc ctc tct cct gag ccc      160
Val Glu Asp Pro Glu Glu Gly Ala Ala Gly Pro Leu Ser Pro Glu Pro
     10              15                  20


agc tca gca gaa gta aaa gcc cgg att cag gat ccc caa gaa cca gac      208
Ser Ser Ala Glu Val Lys Ala Arg Ile Gln Asp Pro Gln Glu Pro Asp
 25              30                  35                  40


ccg agt cag aac tcc atc aca ggg gag cac agc cag ctg tta gat gac      256
Pro Ser Gln Asn Ser Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp
                 45                  50                  55


ggc cat aaa aaa gcc cga aat gct tat ntc aat aat tcc aac tat gaa      304
Gly His Lys Lys Ala Arg Asn Ala Tyr Xaa Asn Asn Ser Asn Tyr Glu
             60                  65                  70


gaa gga gac gaa tat ttt gat aaa aat ttg gca ctc ttt gag gaa gaa      352
Glu Gly Asp Glu Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu
             75                  80                  85


atg gac acc aga cca aag gtg tct tct ctc ctc aac cgc atg gcc aac      400
Met Asp Thr Arg Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn
         90                  95                  100


tat aca aat ctg aca caa gga gca aag gaa cat gaa gag gca gag aac      448
Tyr Thr Asn Leu Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn
105                 110                 115                 120


atc act gaa ggg aaa aag aag cct acc aag agc ccc caa atg ggt act      496
Ile Thr Glu Gly Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr
                 125                 130                 135


ttc atg ggt gtc tac ctc cca tgt cta cag aac atc ttt gga gtg atc      544
Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile
             140                 145                 150


ctc ttc ctg cgt ctt acc tgg gta gtg gga aca gct gga atc ctt cag      592
Leu Phe Leu Arg Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln
         155                 160                 165


gcc ttt gca att gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc      640
Ala Phe Ala Ile Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala
         170                 175                 180


atc tcc atg agc gcc atc gcc act aac gga gtg gtg cca gct ggg ggc      688
Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly
185                 190                 195                 200


tca tac ttc atg att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct      736
Ser Tyr Phe Met Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala
                 205                 210                 215
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gta ggc ctc tgc ttt tat ctt ggc acc aca ttt gca gca gcc atg tat    784
Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr
        220             225             230

att ctt ggt gcc att gaa atc ttt ctg gta tac att gtc ccc cga gct    832
Ile Leu Gly Ala Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala
        235             240             245

gcc atc ttt cgg agt gac gat gca ctc aag gag tca gca gct atg ctg    880
Ala Ile Phe Arg Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu
        250             255             260

aac aac atg cgc gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg    928
Asn Asn Met Arg Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu
265             270             275             280

gtg gta ttc atc ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc    976
Val Val Phe Ile Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe
                285             290             295

ctg gcc tgt gta att gtg tcg atc ttg gct atc tat gct ggt gcc atc    1024
Leu Ala Cys Val Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile
        300             305             310

aag tct tcc ttt gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac    1072
Lys Ser Ser Phe Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn
        315             320             325

cgt acc ctg tca tca aga cac ctt gac att tgc tct aag acc aag gag    1120
Arg Thr Leu Ser Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu
330             335             340

gtt gac aac atg aca gta cca tca aag tta tgg gga ttc ttc tgc aac    1168
Val Asp Asn Met Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn
345             350             355             360

tcg agt cag ttc ttt aat gcc acc tgt gat gag tac ttt gtt cac aat    1216
Ser Ser Gln Phe Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn
            365             370             375

aac gtc atc tca atc caa ggc att cca ggg ttg gct agt ggt atc att    1264
Asn Val Ile Ser Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile
            380             385             390

act gaa aat ctt tgg agt aat tat tta cca aag ggt gag ata att gaa    1312
Thr Glu Asn Leu Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu
        395             400             405

aag cca tca gcc aag tca tct gat gtc tta ggc aac tta aac cat gaa    1360
Lys Pro Ser Ala Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu
        410             415             420

tat gtt ctt gct gat atc acc acc tcc ttc act ctg ctg gtg ggg atc    1408
Tyr Val Leu Ala Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile
425             430             435             440
```

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ttc ttt ccc tcg gtc aca ggt atc atg gct ggg tca aac aga tct gga      1456
Phe Phe Pro Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly
                445             450             455

gat ctg aaa gat gcc cag aag tct att ccc att ggg acc atc ctt gcc      1504
Asp Leu Lys Asp Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala
                460             465             470

atc ctg acc aca tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt      1552
Ile Leu Thr Thr Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly
                475             480             485

gca tgt att gaa gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta      1600
Ala Cys Ile Glu Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val
            490             495             500

aaa ggg aat ttg gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg      1648
Lys Gly Asn Leu Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val
505             510             515             520

atc gtt att ggc tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc      1696
Ile Val Ile Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser
                525             530             535

ntc aca ggt gcg cct cgg ctg ctg cag gct atc gcc aag gat aac atc      1744
Xaa Thr Gly Ala Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile
                540             545             550

ata cct ttc ctt agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct      1792
Ile Pro Phe Leu Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro
                555             560             565

acc tgg gct tta ctt cta act gct gcc ata gca gag ctg gga att ctc      1840
Thr Trp Ala Leu Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu
570             575             580

atc gcc tcc ctg gat ctc gtg gcc cca att ctt tcc atg ttt ttt ctc      1888
Ile Ala Ser Leu Asp Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu
585             590             595             600

atg tgt tac ctc ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg      1936
Met Cys Tyr Leu Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu
                605             610             615

cga acc ccc aac tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc      1984
Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu
                620             625             630

tct ttc atg gga atg agt atc tgt cta gct ctg atg ttc att tct tct      2032
Ser Phe Met Gly Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser
                635             640             645

tgg tat tat gcc att gta gct atg gta ata gct ggc atg atc tac aag      2080
Trp Tyr Tyr Ala Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys
650             655             660

tac att gaa tat caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt      2128
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Tyr Ile Glu Tyr Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg
665             670             675             680

ggg ctg tcg ctc agt gca gcc cgc ttc gct ttg ctc cgt cta gag gaa    2176
Gly Leu Ser Leu Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu
                685             690             695

gga cct cct cac act aaa aac tgg agg cct cag ctg ctc gtc cta ctg    2224
Gly Pro Pro His Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu
            700             705             710

aag ctg gat gaa gat tta cac gtc aag cac cct cgc ctc ctc acc ttt    2272
Lys Leu Asp Glu Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe
            715             720             725

gcc tcc cag ctc aag gca gga aag gga ctc acg att gtg ggc tct gtc    2320
Ala Ser Gln Leu Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val
        730             735             740

atc gtg ggg aac ttc ttg gag aac tat ggt gac gcg ctc gcg gca gag    2368
Ile Val Gly Asn Phe Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu
745             750             755             760

cag acc att aag cac cta atg gag gca gaa aag gta aaa gga ttc tgc    2416
Gln Thr Ile Lys His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys
                765             770             775

caa ttg gtg gtg gct gcc aag ctg aaa gag ggc att tca cac ctc atc    2464
Gln Leu Val Val Ala Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile
            780             785             790

cag tcc tgt ggc ctc gga ggc atg aaa cac aac aca gtg gtg atg ggc    2512
Gln Ser Cys Gly Leu Gly Gly Met Lys His Asn Thr Val Val Met Gly
        795             800             805

tgg ccc aat ggc tgg cgt cag agt gaa gat gct cgc gct tgg aag act    2560
Trp Pro Asn Gly Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr
        810             815             820

ttc att ggc aca gta cga gtg aca act gct gcc cat cta gcc ctg ctg    2608
Phe Ile Gly Thr Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu
825             830             835             840

gtg gct aaa aat gtc tcc ttc ttt ccc agc aat gtg gag cag ttt tct    2656
Val Ala Lys Asn Val Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser
            845             850             855

gag ggc aac att gat gtg cgg tgg att gtg cat gat ggg ggc atg ctc    2704
Glu Gly Asn Ile Asp Val Arg Trp Ile Val His Asp Gly Gly Met Leu
            860             865             870

atg cta tta ccg ttc ctg ctg aaa cag cac aag gtt tgg cgg aaa tgc    2752
Met Leu Leu Pro Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys
            875             880             885
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agc ata cgg atc ttc aca gta gcc caa cta gaa gac aac agt atc cag    2800
Ser Ile Arg Ile Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln
    890             895             900

atg aag aag gat ctg gcc acc ttt ctg tac cac ctg cgc att gag gca    2848
Met Lys Lys Asp Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala
905             910             915             920

gaa gtg gaa gtg gtg gag atg cac gac agt gac ata tct gcc tat aca    2896
Glu Val Glu Val Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr
            925             930             935

tat gag cgc acc ctg atg atg gag cag agg tcc cag atg ctt cgg cat    2944
Tyr Glu Arg Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His
            940             945             950

atg cgg ctg tcc aaa aca gag cga gac agg gag gca cag ctg gtg aaa    2992
Met Arg Leu Ser Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys
            955             960             965

gat cga aac tca atg nta cgc ttg acc agc att ggc tct gat gag gac    3040
Asp Arg Asn Ser Met Xaa Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp
    970             975             980

gaa gag aca gaa acg tac cag gag aag gtg cac atg act tgg acc aag    3088
Glu Glu Thr Glu Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys
985             990             995             1000

gat aaa tac atg gca tcc cgg ggg caa aag gtc aag tca atg gaa gga    3136
Asp Lys Tyr Met Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly
            1005            1010            1015

ttc cag gac cta ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg    3184
Phe Gln Asp Leu Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg
            1020            1025            1030

atg cat aca gca gtg aag ctc aat gaa gtt ata gtc aac aag tct cat    3232
Met His Thr Ala Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His
            1035            1040            1045

gaa gca aag ctg gtt ttg ttg aat atg cca gga cca ccc cgg aac cct    3280
Glu Ala Lys Leu Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro
    1050            1055            1060

gaa ggt gat gaa aac tac atg gaa ttt cta gaa gtg ctc act gag gga    3328
Glu Gly Asp Glu Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly
1065            1070            1075            1080

tta gaa cga gtc ctt ctt gtc cgg ggt ggt ggc agt gag gtc atc acc    3376
Leu Glu Arg Val Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr
            1085            1090            1095

att tac tca taatcagctg tgggagattc tgcgtggtcc gacttcccta           3425
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gcagctgcta ttcttttgtt tacatagagt ctggttttgt ttgttttgct ctgtgctggg 6005

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Ala Gly Pro Leu Ser Pro Glu Pro Ser Ser Ala Glu Val Lys Ala Arg
              20                  25                  30
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Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala Arg Asn Ala
        50              55              60

Tyr Xaa Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr Phe Asp Lys
65              70              75              80

Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro Lys Val Ser
                85              90              95

Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr Gln Gly Ala
            100             105             110

Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys Lys Lys Pro
        115             120             125

Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys
        130             135             140

Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val
145             150             155             160

Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala Ile Val Leu Ile Cys
            165             170             175

Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr
            180             185             190

Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile Ser Arg Ala
            195             200             205

Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly
        210             215             220

Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile Glu Ile Phe
225             230             235             240

Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe Arg Ser Asp Asp Ala
            245             250             255

Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr
            260             265             270

Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly Val Arg Tyr
        275             280             285

Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val Ile Val Ser Ile
        290             295             300

Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala Pro Pro His
305             310             315             320

Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser Arg His Leu
            325             330             335
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Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn Met Thr Val Pro Ser
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Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe Asn Ala Thr
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Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile Ser Ile Gln Gly Ile
370             375             380

Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp Ser Asn Tyr
385             390             395             400

Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys Ser Ser Asp
            405             410             415

Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu Ala Asp Ile Thr Thr
            420             425             430

Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val Thr Gly Ile
        435             440             445

Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln Lys Ser
    450             455             460

Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser Phe Val Tyr
465             470             475             480

Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu
            485             490             495

Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val Val Gly Thr
        500             505             510

Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser
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Thr Cys Gly Ala Gly Leu Gln Ser Xaa Thr Gly Ala Pro Arg Leu Leu
    530             535             540

Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg Val Phe Gly
545             550             555             560

His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala
            565             570             575

Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp Leu Val Ala
            580             585             590

Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val Asn Leu
        595             600             605

Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg
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Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met Ser Ile Cys
625             630             635             640
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Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile Val Ala Met
                645   650   655

Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln Gly Ala Glu
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Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg
        675   680   685

Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp
    690   695   700

Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp Leu His Val
705   710   715   720

Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys Ala Gly Lys
            725   730   735

Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe Leu Glu Asn
            740   745   750

Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile Lys His Leu Met Glu
        755   760   765

Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala Ala Lys Leu
    770   775   780

Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met
785   790   795   800

Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp Arg Gln Ser
            805   810   815

Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val Arg Val Thr
        820   825   830

Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Val Ser Phe Phe
    835   840   845

Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp Val Arg Trp
    850   855   860

Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys
865   870   875   880

Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe Thr Val Ala
            885   890   895

Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe
        900   905   910

Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val Glu Met His
        915   920   925

Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu
    930   935   940

Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg
945   950   955   960

Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Xaa Arg Leu
                965   970   975

Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu
            980   985   990

Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly
        995   1000   1005

Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg
    1010   1015   1020

Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn
1025   1030   1035   1040

Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn
            1045   1050   1055

Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu
        1060   1065   1070

Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg
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Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
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Met Pro Asn Asn Leu Thr Asp Cys Glu Asp Gly Asp Gly Gly Ala Asn
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ccg ggt gat ggc aac ccc aag gaa agc agt ccc ttc atc aac agc acc    96
Pro Gly Asp Gly Asn Pro Lys Glu Ser Ser Pro Phe Ile Asn Ser Thr
                20                  25                  30


gac aca gag aag gga aag gag tat gat ggc aag aac atg gcc ttg ttt   144
Asp Thr Glu Lys Gly Lys Glu Tyr Asp Gly Lys Asn Met Ala Leu Phe
            35                  40                  45


gag gag gag atg gac acc agc cct atg gtg tcc tcc ttg ctc agt ggc   192
Glu Glu Glu Met Asp Thr Ser Pro Met Val Ser Ser Leu Leu Ser Gly
        50                  55                  60


ctg gcc aac tac acc aac ctg ccc cag gga agt agg gag cat gaa gag   240
Leu Ala Asn Tyr Thr Asn Leu Pro Gln Gly Ser Arg Glu His Glu Glu
 65                  70                  75                  80


gca gaa aac aat gag ggt gga aaa aag aag ccg gtg cag gcc cca cgc   288
Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg
                85                  90                  95


atg ggc acc ttc atg ggc gtg tac ctg ccg tgc ctg cag aac atc ttt   336
Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe
                100                 105                 110


ggc gtc atc ctc ttc ctg cgg ntc acc tgg gtg gtg ggc att gca ggc   384
Gly Val Ile Leu Phe Leu Arg Xaa Thr Trp Val Val Gly Ile Ala Gly
            115                 120                 125


atc atg gag tcc ttc tgc atg gtg ttc atc tgc tgc tcc tgt acg atg   432
Ile Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met
        130                 135                 140


ctc acg gcc atc tcc atg agt gca att gca acg aat ggt gtt gtg cct   480
Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro
145                 150                 155                 160


gct ggt ggc tcc tac tac atg att tcc agg tct ctg ggc cca gag ttt   528
Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe
                165                 170                 175


ggg ggt gcc gtg ggc ctc tgc ttc tac ctg ggc act acc ttt gca gga   576
Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Gly
                180                 185                 190


gcc atg tac atc ctg ggc acc atc gaa atc ctg ctg gct tac ctc ttc   624
Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Leu Leu Ala Tyr Leu Phe
                195                 200                 205


cca gcc atg gcc atc ttc aag gca gaa gat gcc agt ggg gag gca gca   672
Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala
            210                 215                 220
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gcc atg ctg aac aac atg cgt gtt tac ggc acc tgt gtg ctc acc tgc    720
Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys
225                 230                 235                 240

atg gcc act gtg gtg ttt gtg ggt gtc aag tat gtc aac aag ttt gcc    768
Met Ala Thr Val Val Phe Val Gly Val Lys Tyr Val Asn Lys Phe Ala
                    245                 250                 255

ctt gtc ttc ctg ggt tgt gtc atc ctc tcc atc ctg gcc atc tat gct    816
Leu Val Phe Leu Gly Cys Val Ile Leu Ser Ile Leu Ala Ile Tyr Ala
                260                 265                 270

ggg gtc atc aag tct gcc ttc gac cca ccc aac ttc ccg atc tgc ctc    864
Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu
            275                 280                 285

ctg ggt aac cgc acg ctg tct cgc cat ggc ttt gat gtc tgt gcc aag    912
Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys
        290                 295                 300

ctg gct tgg gaa gga aat gag acg gtg acc aca cgg cta tgg ggc ctt    960
Leu Ala Trp Glu Gly Asn Glu Thr Val Thr Thr Arg Leu Trp Gly Leu
305                 310                 315                 320

ttc tgc tcc tct cgc ttc ctc aac gcc acc tgt gat gaa tac ttc acc   1008
Phe Cys Ser Ser Arg Phe Leu Asn Ala Thr Cys Asp Glu Tyr Phe Thr
                325                 330                 335

cga aac aat gtc aca gag atc cag ggc atc cct ggt gct gcc agt ggc   1056
Arg Asn Asn Val Thr Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly
            340                 345                 350

ctc atc aaa gag aac ntc tgg agc tcc tac ctg acc aag ggc gtg att   1104
Leu Ile Lys Glu Asn Xaa Trp Ser Ser Tyr Leu Thr Lys Gly Val Ile
            355                 360                 365

gtg gag agg agt ggg atg acc tcg gtg ggc ctg gcc gat ggc act cct   1152
Val Glu Arg Ser Gly Met Thr Ser Val Gly Leu Ala Asp Gly Thr Pro
370                 375                 380

atc gac atg gac cac cct tat gtc ttc agt gat atg acc tcc tac ttc   1200
Ile Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe
385                 390                 395                 400

acc ctg ctg gtt ggc atc tac ttc ccc tca gtc aca ggg atc atg gct   1248
Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr Gly Ile Met Ala
                405                 410                 415

ggt tct aac cgc tct ggg gac ctg agg gat gcc cag aag tca atc ccc   1296
Gly Ser Asn Arg Ser Gly Asp Leu Arg Asp Ala Gln Lys Ser Ile Pro
            420                 425                 430

act ggc acc atc ctg gcc atc gcc acc acc tct gct gtc tac atc agc   1344
Thr Gly Thr Ile Leu Ala Ile Ala Thr Thr Ser Ala Val Tyr Ile Ser
            435                 440                 445
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tcc gtt gtt ctg ttt ggg gcc tgc att gag ggg gtc gtc ctg cgg gac    1392
Ser Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg Asp
    450             455             460

aag ttt ggc gaa gct gtg aat ggc aac ctc gtg gtg ggc act ctg gcc    1440
Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala
465             470             475             480

tgg cca tct cca tgg gta att gtc atc gga tcc ttc ttc tcc acc tgt    1488
Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr Cys
            485             490             495

ggg gct ggg ctg cag agc ctc acg ggg gcc cca cgc ctg ctg cag gcc    1536
Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln Ala
            500             505             510

atc tcg agg gat ggc att gtg ccc ttc ctg cag gtc ttt ggc cat ggc    1584
Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly
            515             520             525

aag gcc aat gga gag ccg acc tgg gcc ctg ctc ctg act gcc tgc atc    1632
Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Cys Ile
    530             535             540

tgc gag att ggc atc ctc att gca tcc ctc gac gag gtg gcc ccc atc    1680
Cys Glu Ile Gly Ile Leu Ile Ala Ser Leu Asp Glu Val Ala Pro Ile
545             550             555             560

ctc tct atg ttc ttc ctg atg tgc tac atg ttt gtg aat ctg gcc tgt    1728
Leu Ser Met Phe Phe Leu Met Cys Tyr Met Phe Val Asn Leu Ala Cys
            565             570             575

gca gtg cag acg ctg ctg agg aca ccc aac tgg agg cca cgc ttt cga    1776
Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg
            580             585             590

tat tac cac tgg acc ctc tcc ttc ctg ggc atg agc ctc tgc ctg gcc    1824
Tyr Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser Leu Cys Leu Ala
            595             600             605

ctc atg ttc atc tgc tcc tgg tat tat gca ctg gta gcc atg ctc att    1872
Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Val Ala Met Leu Ile
    610             615             620

gct gga ctc atc tac aag tac att gag tac cgt ggg gca gag aag gag    1920
Ala Gly Leu Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly Ala Glu Lys Glu
625             630             635             640

tgg ggc gat ggg ata cga ggt ctg tct ctc agt gcg gct cgc tat gcc    1968
Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
            645             650             655

ctc tta cgc ctg gag gaa ggg ccc cca cac acc aag aac tgg agg cca    2016
Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro
            660             665             670
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cag ctg ctg gtg ctg gtg cgt gtg gac caa gac cag aat gtg gtg cac   2064
Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His
        675             680             685

ccc cag ctg ctc tca ctg acc tcc cag ctg aag gca ggg aag ggc ctg   2112
Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu
        690             695             700

acc atc gtg ggc tct gtc ctt gag ggc acc ttt ctg gaa aat cat cca   2160
Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Glu Asn His Pro
705             710             715             720

cag gcc cag cgg gca gaa gag tct atc agg cgc ctg atg gag gca gag   2208
Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu
        725             730             735

aag gtg aag ggc ttc tgc cag gtg gtg atc tcc tcc aac ttg cgt gat   2256
Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp
        740             745             750

ggc gtg tcc cat ctg atc cag tcc ggg ggc ctc ggg ggg ctg cag cac   2304
Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His
        755             760             765

aac act gtg ctt gtt ggc tgg ccc cgc aac tgg cgc cag aag gaa gat   2352
Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp
        770             775             780

cat cag acg tgg agg aac ttc att gag ctg gtc cgg gaa acc aca gct   2400
His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala
785             790             795             800

ggc cac tta gcc ctg ctg gtc acc aag aac gtt tcc atg ttt cct ggg   2448
Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly
        805             810             815

aac cct gag cgc ttc tct gag ggc agc atc gac gtt tgg tgg att gtg   2496
Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val
        820             825             830

cac gat gga ggc atg ctc atg ctg ctg ccc ttc ctg ctg cgg cac cac   2544
His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His
        835             840             845

aag gtc tgg cgg aag tgc aag atg cgt atc ttc act gtg gcc cag atg   2592
Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
        850             855             860

gat gac aat agc atc cag atg aag aag gat ctg acc aca ttt ctg tat   2640
Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr
865             870             875             880

cat tta cgc atc act gcg gag gtc gag gtg gtg gag atg cat gag agc   2688
His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser
        885             890             895
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gac atc tca gct tac acc tat gag aag acg ttg gtg atg gag cag cgt    2736
Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
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tcc cag atc ntc aaa cag atg cat tta acc aag aat gag cgg gag cgg    2784
Ser Gln Ile Xaa Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
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gag atc cag agt atc aca gat gag tca cga ggc tca atc cgg aga aag    2832
Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
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aat cca gcc aac acg cgg ctc cgc ctg aac gtc cca gaa gag acg gct    2880
Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
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ggt gac agt gaa gag aag cca gag gag gag gtg cag ctg atc cac gat    2928
Gly Asp Ser Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
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Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu
            980             985             990

cct gag ggg gaa ggg gag aca gat ccg gag aag gtg cat ctc acc tgg    3024
Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp
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acc aag gac aag tcg gtg gca gag aag aat aag ggc ccc agt cct gtc    3072
Thr Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro Val
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tcc tct gag ggc atc aag gac ttc ttc agc atg aag ccg gag tgg gag    3120
Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu Trp Glu
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aac ttg aac cag tcc aac gtg cgg cgc atg cac acg gcc gtg cgg ctg    3168
Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala Val Arg Leu
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aac gag gtc atc gtg aag aaa tcc cgg gac gcc aag ctt gtt ttg ctc    3216
Asn Glu Val Ile Val Lys Lys Ser Arg Asp Ala Lys Leu Val Leu Leu
            1060            1065            1070

aac atg cct ggg cct ccc cgc aac cgc aat ggt gat gaa aac tac atg    3264
Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly Asp Glu Asn Tyr Met
            1075            1080            1085

gag ttt ctc gag gtc ctc aca gag cac ctg gac cgg gtg atg ctg gtc    3312
Glu Phe Leu Glu Val Leu Thr Glu His Leu Asp Arg Val Met Leu Val
            1090            1095            1100

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Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
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Met Pro Asn Asn Leu Thr Asp Cys Glu Asp Gly Asp Gly Gly Ala Asn
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Pro Gly Asp Gly Asn Pro Lys Glu Ser Ser Pro Phe Ile Asn Ser Thr
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```

```
Asp Thr Glu Lys Gly Lys Glu Tyr Asp Gly Lys Asn Met Ala Leu Phe
        35              40              45

Glu Glu Glu Met Asp Thr Ser Pro Met Val Ser Ser Leu Leu Ser Gly
    50              55              60

Leu Ala Asn Tyr Thr Asn Leu Pro Gln Gly Ser Arg Glu His Glu Glu
65              70              75                      80

Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg
                85              90                      95

Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe
            100             105             110

Gly Val Ile Leu Phe Leu Arg Xaa Thr Trp Val Val Gly Ile Ala Gly
            115             120             125

Ile Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met
        130             135             140

Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro
145             150             155             160

Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe
                165             170             175

Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Gly
            180             185             190

Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Leu Leu Ala Tyr Leu Phe
            195             200             205

Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala
    210             215             220

Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys
225             230             235             240

Met Ala Thr Val Val Phe Val Gly Val Lys Tyr Val Asn Lys Phe Ala
            245             250             255

Leu Val Phe Leu Gly Cys Val Ile Leu Ser Ile Leu Ala Ile Tyr Ala
            260             265             270

Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu
    275             280             285

Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys
    290             295             300

Leu Ala Trp Glu Gly Asn Glu Thr Val Thr Thr Arg Leu Trp Gly Leu
305             310             315             320

Phe Cys Ser Ser Arg Phe Leu Asn Ala Thr Cys Asp Glu Tyr Phe Thr
            325             330             335
```

```
Arg Asn Asn Val Thr Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly
            340             345             350

Leu Ile Lys Glu Asn Xaa Trp Ser Ser Tyr Leu Thr Lys Gly Val Ile
        355             360             365

Val Glu Arg Ser Gly Met Thr Ser Val Gly Leu Ala Asp Gly Thr Pro
    370             375             380

Ile Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe
385             390             395             400

Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr Gly Ile Met Ala
            405             410             415

Gly Ser Asn Arg Ser Gly Asp Leu Arg Asp Ala Gln Lys Ser Ile Pro
            420             425             430

Thr Gly Thr Ile Leu Ala Ile Ala Thr Thr Ser Ala Val Tyr Ile Ser
            435             440             445

Ser Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg Asp
    450             455             460

Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala
465             470             475             480

Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr Cys
            485             490             495

Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln Ala
            500             505             510

Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly
        515             520             525

Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Cys Ile
    530             535             540

Cys Glu Ile Gly Ile Leu Ile Ala Ser Leu Asp Glu Val Ala Pro Ile
545             550             555             560

Leu Ser Met Phe Phe Leu Met Cys Tyr Met Phe Val Asn Leu Ala Cys
            565             570             575

Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg
            580             585             590

Tyr Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser Leu Cys Leu Ala
            595             600             605

Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Val Ala Met Leu Ile
    610             615             620

Ala Gly Leu Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly Ala Glu Lys Glu
625             630             635             640
```

```
Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
            645               650               655

Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro
            660               665               670

Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His
            675               680               685

Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu
    690               695               700

Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Glu Asn His Pro
705               710               715               720

Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu
            725               730               735

Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp
            740               745               750

Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His
            755               760               765

Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp
    770               775               780

His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala
785               790               795               800

Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly
            805               810               815

Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val
            820               825               830

His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His
            835               840               845

Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
    850               855               860

Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr
865               870               875               880

His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser
            885               890               895

Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
            900               905               910

Ser Gln Ile Xaa Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
            915               920               925

Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
    930               935               940
```

Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
945   950   955   960

Gly Asp Ser Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
            965   970   975

Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu
        980   985   990

Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp
    995   1000   1005

Thr Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro Val
    1010   1015   1020

Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu Trp Glu
1025   1030   1035   1040

Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala Val Arg Leu
            1045   1050   1055

Asn Glu Val Ile Val Lys Lys Ser Arg Asp Ala Lys Leu Val Leu Leu
        1060   1065   1070

Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly Asp Glu Asn Tyr Met
        1075   1080   1085

Glu Phe Leu Glu Val Leu Thr Glu His Leu Asp Arg Val Met Leu Val
    1090   1095   1100

Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
1105   1110   1115

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tctaacggag cc atg ccc acg aac ttt acg gtg gtg ccg gtg gag gcg cgc 111
           Met Pro Thr Asn Phe Thr Val Val Pro Val Glu Ala Arg
           1   5   10

gcc gac ggc gcc ggg gac gaa gct gct gag cgc acg gaa gaa ccc gag 159
Ala Asp Gly Ala Gly Asp Glu Ala Ala Glu Arg Thr Glu Glu Pro Glu
 15   20   25

tct ccc gag agc gtg gat caa acc tcc cct acg ccg gga gat gga aac 207
Ser Pro Glu Ser Val Asp Gln Thr Ser Pro Thr Pro Gly Asp Gly Asn
30   35   40   45

ccc agg gaa aac agc cct ttc atc aat aat gtg gag gtg gaa aga gag 255
Pro Arg Glu Asn Ser Pro Phe Ile Asn Asn Val Glu Val Glu Arg Glu
          50   55   60

agc tac ttc gag ggg aag aac atg gca ntt ttt gag gaa gag atg gac 303
Ser Tyr Phe Glu Gly Lys Asn Met Ala Xaa Phe Glu Glu Glu Met Asp
          65   70   75

agc aac ccc atg gtg tca tca ctg ctg aac aag ctg gcc aac tat acc 351
Ser Asn Pro Met Val Ser Ser Leu Leu Asn Lys Leu Ala Asn Tyr Thr
        80   85   90

aac ctg agc cag ggt gtg gta gag cat gag gaa gat gag gac agc cgg 399
Asn Leu Ser Gln Gly Val Val Glu His Glu Glu Asp Glu Asp Ser Arg
       95   100   105

agg cga gag gtc aag gcc cca cgc atg ggc acc ttc atc gga gtc tac 447
Arg Arg Glu Val Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr
110   115   120   125

ctg ccg tgc ctg cag aac atc ttg ggt gtt atc ctt ttc ctg cgt ctg 495
Leu Pro Cys Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu
          130   135   140

acc tgg att gtg ggg gca gct ggt gtt atg gag tcc ttc ntc att gtg 543
Thr Trp Ile Val Gly Ala Ala Gly Val Met Glu Ser Phe Xaa Ile Val
          145   150   155

gcc atg tgc tgc acc tgt aca atg ctg aca gcc atc tcc atg agc gcc 591
Ala Met Cys Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala
          160   165   170

atc gct acc aac ggc gtg gtc cca gcg gga ggc tcg tac tac atg atc 639
Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile
        175   180   185

tcc cgt tcg ctg ggg cct gag ttt gga ggt gct gtt ggc ctc tgc ttc 687
Ser Arg Ser Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe
190   195   200   205

```
tac ttg ggc acg aca ttt gca ggc gcc atg tac atc ctg ggt acc atc    735
Tyr Leu Gly Thr Thr Phe Ala Gly Ala Met Tyr Ile Leu Gly Thr Ile
            210                 215                 220

gag atc ttc ctg acc tac atc tct cca agt gcg gcc atc ttc cag gca    783
Glu Ile Phe Leu Thr Tyr Ile Ser Pro Ser Ala Ala Ile Phe Gln Ala
            225                 230                 235

gag acg gcg gat ggc gag gcg gcc gca ctg ttg aac aac atg cgt gtg    831
Glu Thr Ala Asp Gly Glu Ala Ala Ala Leu Leu Asn Asn Met Arg Val
            240                 245                 250

tat ggc agc tgt gcc ctg gca ctc atg gcg gtg gtg gtc ttt gtt ggt    879
Tyr Gly Ser Cys Ala Leu Ala Leu Met Ala Val Val Val Phe Val Gly
            255                 260                 265

gtc aaa tat gtc aac aag ctg gca ctg gtc ttc tta gcc tgt gtt gtg    927
Val Lys Tyr Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val
270                 275                 280                 285

ctt tct atc ctg gcc atc tat gct ggt gtc atc aag aca gcc ttt gcc    975
Leu Ser Ile Leu Ala Ile Tyr Ala Gly Val Ile Lys Thr Ala Phe Ala
            290                 295                 300

cca cct gac atc ccg gtc tgc ctt cta ggg aac cgc acg ctg gca aat   1023
Pro Pro Asp Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ala Asn
            305                 310                 315

cgc aac ttt gat acc tgt gcc aag atg cag gtt gtc agc aac ggt aca   1071
Arg Asn Phe Asp Thr Cys Ala Lys Met Gln Val Val Ser Asn Gly Thr
            320                 325                 330

gtg acc act gca ctc tgg cgc ctc ttc tgc aat ggc tcc agc ttg ggt   1119
Val Thr Thr Ala Leu Trp Arg Leu Phe Cys Asn Gly Ser Ser Leu Gly
            335                 340                 345

gcc acc tgt gat gag tac ttt gca cag aac aac gtt act gag ata cag   1167
Ala Thr Cys Asp Glu Tyr Phe Ala Gln Asn Asn Val Thr Glu Ile Gln
350                 355                 360                 365

ggc atc cct ggt gtg gcc agt ggt gtc ttc ctg gat aac ctg tgg agc   1215
Gly Ile Pro Gly Val Ala Ser Gly Val Phe Leu Asp Asn Leu Trp Ser
            370                 375                 380

aca tat tca gac aag ggg gca ttt gtg gaa aag aaa ggt gtg tcc tca   1263
Thr Tyr Ser Asp Lys Gly Ala Phe Val Glu Lys Lys Gly Val Ser Ser
            385                 390                 395

gtg cct gtg tcc gag gag agc cgg cct ggt gga ttg cca tac gtc ctc   1311
Val Pro Val Ser Glu Glu Ser Arg Pro Gly Gly Leu Pro Tyr Val Leu
            400                 405                 410

aca gac atc atg acc tac ttc acc atg cta gtt ggc atc tac ttc ccg   1359
Thr Asp Ile Met Thr Tyr Phe Thr Met Leu Val Gly Ile Tyr Phe Pro
            415                 420                 425
```

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tct gta act ggg atc atg gca gga tcc aac cgc tcc ggg gac ctc aaa    1407
Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys
430             435             440             445

gac gcc cag aag tct att cca aca ggg acc att ctg gcc atc gtg act    1455
Asp Ala Gln Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr
                450             455             460

aca tct ttc att tat ntt tcc tgc ata gtg ctg ttt ggg gcc tgc att    1503
Thr Ser Phe Ile Tyr Xaa Ser Cys Ile Val Leu Phe Gly Ala Cys Ile
                465             470             475

gaa ggt gta gtc ctg cga gat aag ttt ggg gag gcc ttg caa ggg aac    1551
Glu Gly Val Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn
            480             485             490

ctg gtc att ggc atg ctg gcc tgg cca tct ccc tgg gtc att gtg att    1599
Leu Val Ile Gly Met Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile
            495             500             505

ggc tcc ttc ttc tcc acc tgt ggt gct ggc ctg cag agc ctg act ggg    1647
Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly
510             515             520             525

gca ccc cgc cta ctg cag gcc att gcg cgt gac gga atc atc ccc ttc    1695
Ala Pro Arg Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Ile Pro Phe
                530             535             540

cta cag gtg ttt ggt cat gga aag gcc aac ggg gag ccc aca tgg gcc    1743
Leu Gln Val Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala
                545             550             555

ctg ctg ctc acg gct ctc atc tgt gag acc ggt atc ctc atc gcc tcc    1791
Leu Leu Leu Thr Ala Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser
            560             565             570

ctg gac agt gtg gcc ccc atc ctg tcc atg ttc ttc ntc atg tgc tac    1839
Leu Asp Ser Val Ala Pro Ile Leu Ser Met Phe Phe Xaa Met Cys Tyr
575             580             585

atg ttc gtc aat ctg gcc tgt gcc gta cag acc ctg cta cgc aca ccc    1887
Met Phe Val Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro
590             595             600             605

aac tgg cgt cca cgc ttc aag ttc tac cac tgg acc ctc tcc ttc ctt    1935
Asn Trp Arg Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu
                610             615             620

ggg atg agt ctc tgc ctc gcg ctg atg ttc atc tgc tcc tgg tac tac    1983
Gly Met Ser Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr
            625             630             635

gcc ntt ttc gcc atg ctc att gcc ggc tgc atc tac aag tac atc gag    2031
Ala Xaa Phe Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu
            640             645             650
```

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tac cgc ggg gct gag aag gag tgg ggg gat ggc atc agg ggc ctg tca    2079
Tyr Arg Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser
    655                 660             665

ctg aat gct gcc cgc tac gcc ctg ctg cgt gtg gaa cat ggg ccc cca    2127
Leu Asn Ala Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro
670             675                 680                 685

cat acc aag aac tgg agg ccc cag gtg ttg gtg atg ctg aac ctg gac    2175
His Thr Lys Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp
                690             695                 700

tcg gag cag tgt gta aag cac ccc cgc ctg ctg tcc ttc acc tct cag    2223
Ser Glu Gln Cys Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln
            705             710                 715

ctg aag gct ggc aag ggc ctg acc atc gtg gga tct gtg cta gag ggc    2271
Leu Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly
            720             725             730

acc tac tta gac aag cat gtg gag gcc cag agg gct gaa gag aat atc    2319
Thr Tyr Leu Asp Lys His Val Glu Ala Gln Arg Ala Glu Glu Asn Ile
    735             740             745

cgg tct ctg atg agt gca gag aag acg aag ggc ttc tgc cag ctg gtg    2367
Arg Ser Leu Met Ser Ala Glu Lys Thr Lys Gly Phe Cys Gln Leu Val
750             755             760             765

gtg tcc tcc aac ctg cga gat ggt gcg tcc cac ctg atc cag tcg gct    2415
Val Ser Ser Asn Leu Arg Asp Gly Ala Ser His Leu Ile Gln Ser Ala
            770             775             780

ggc ctc ggt ggc atg aaa cac aac act gtc ctc atg gcc tgg cca gag    2463
Gly Leu Gly Gly Met Lys His Asn Thr Val Leu Met Ala Trp Pro Glu
            785             790             795

gct tgg aag gag gca gat aat cct ttc tcc tgg aag aac ttt gta gac    2511
Ala Trp Lys Glu Ala Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp
            800             805             810

aca gtc cgt gac act aca gca gca cat cag gcc ttg ttg gtg gcc aag    2559
Thr Val Arg Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys
    815             820             825

aac att gac tta ttc cca caa aac caa gag cgc ttc agc gac ggg aac    2607
Asn Ile Asp Leu Phe Pro Gln Asn Gln Glu Arg Phe Ser Asp Gly Asn
830             835             840             845

att gat gtg tgg tgg atc gtg cat gac ggg ggc atg ctc atg ctt ctg    2655
Ile Asp Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu
            850             855             860

ccc ttt ctg ctg cgc cag cac aag gtg tgg cga aag tgc cgg atg cgc    2703
Pro Phe Leu Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg
            865             870             875
```

```
atc ttc act gtg gcc cag gtg gat gat aac agc atc cag atg aag aag   2751
Ile Phe Thr Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys
        880             885             890

gac ctg cag atg ttc ctg tac cac ctc agg atc agt gcc gag gtg gag   2799
Asp Leu Gln Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu
        895             900             905

gtg gtg gag atg gtt gaa aat gat att tcc gca ttc acc tat gag aag   2847
Val Val Glu Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Lys
910             915             920             925

acg cta atg atg gag cag agg tca cag atg ctg aaa cag atg cag ttg   2895
Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu
            930             935             940

tca aag aat gag cgg gag aga gag gcc cag ctg att cat gac agg aac   2943
Ser Lys Asn Glu Arg Glu Arg Glu Ala Gln Leu Ile His Asp Arg Asn
            945             950             955

act gca tcc cat acc aca gca act gct aga acc caa gcc cca cca aca   2991
Thr Ala Ser His Thr Thr Ala Thr Ala Arg Thr Gln Ala Pro Pro Thr
            960             965             970

ccc gac aaa gtg cag atg aca tgg acg aaa gag aaa ctc att gca gag   3039
Pro Asp Lys Val Gln Met Thr Trp Thr Lys Glu Lys Leu Ile Ala Glu
        975             980             985

aaa cac agg aac aag gac act ggc cca tca ggc ttc aaa gac ctc ttc   3087
Lys His Arg Asn Lys Asp Thr Gly Pro Ser Gly Phe Lys Asp Leu Phe
990             995             1000            1005

agc cta aag ccg gac cag tcc aac gtc agg agg atg cat act gct gtg   3135
Ser Leu Lys Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val
            1010            1015            1020

aag ntc aac ggc gta gtt ctc aac aag tcc cag gat gcc caa ctg gtc   3183
Lys Xaa Asn Gly Val Val Leu Asn Lys Ser Gln Asp Ala Gln Leu Val
            1025            1030            1035

ctg ctg aat atg cca ggc ccc cca aaa agt cgg cag ggg gac gag aac   3231
Leu Leu Asn Met Pro Gly Pro Pro Lys Ser Arg Gln Gly Asp Glu Asn
            1040            1045            1050

tac atg gag ttc ctc gag gtc ctg acg gaa ggg ctg aac agg gtc ctc   3279
Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu
        1055            1060            1065

ctg gtc agg ggt ggt ggc cga gaa gtc atc acc atc tac tcc           3321
Leu Val Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
1070            1075            1080

taacacctgc aacctggaca cacctggatg gggtcaggac tgtgcaagct gcctgtggcc   3381

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ctaccaacat gttgcagtga ttctggtcac cctgacacac acggcttccc acagacataa   3501
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gtttgttcac aggctgtagg caacagcact gatccgttcc tcacgttctg tatggcgtat 4581

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cgacgttcca gttagggtag aggccacgtt tgcacctgca caggttcttc aggctttgtt 4761

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cctcctttct gttgcaatct ccatgttcct ggtaactgtg gccgttcaga tcagtttcat 5061

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Ala Gly Asp Glu Ala Ala Glu Arg Thr Glu Glu Pro Glu Ser Pro Glu
            20                  25                  30

Ser Val Asp Gln Thr Ser Pro Thr Pro Gly Asp Gly Asn Pro Arg Glu
            35                  40                  45

Asn Ser Pro Phe Ile Asn Asn Val Glu Val Glu Arg Glu Ser Tyr Phe
    50                  55                  60

Glu Gly Lys Asn Met Ala Xaa Phe Glu Glu Glu Met Asp Ser Asn Pro
 65                  70                  75                  80

Met Val Ser Ser Leu Leu Asn Lys Leu Ala Asn Tyr Thr Asn Leu Ser
                85                  90                  95

Gln Gly Val Val Glu His Glu Glu Asp Glu Asp Ser Arg Arg Arg Glu
            100                 105                 110

Val Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr Leu Pro Cys
            115                 120                 125

Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Ile
    130                 135                 140

Val Gly Ala Ala Gly Val Met Glu Ser Phe Xaa Ile Val Ala Met Cys
145                 150                 155                 160

Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr
                165                 170                 175

Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser
            180                 185                 190
```

```
Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly
        195             200             205

Thr Thr Phe Ala Gly Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Phe
    210             215             220

Leu Thr Tyr Ile Ser Pro Ser Ala Ala Ile Phe Gln Ala Glu Thr Ala
225             230             235             240

Asp Gly Glu Ala Ala Ala Leu Leu Asn Asn Met Arg Val Tyr Gly Ser
            245             250             255

Cys Ala Leu Ala Leu Met Ala Val Val Val Phe Val Gly Val Lys Tyr
            260             265             270

Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val Leu Ser Ile
        275             280             285

Leu Ala Ile Tyr Ala Gly Val Ile Lys Thr Ala Phe Ala Pro Pro Asp
    290             295             300

Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ala Asn Arg Asn Phe
305             310             315             320

Asp Thr Cys Ala Lys Met Gln Val Val Ser Asn Gly Thr Val Thr Thr
            325             330             335

Ala Leu Trp Arg Leu Phe Cys Asn Gly Ser Ser Leu Gly Ala Thr Cys
            340             345             350

Asp Glu Tyr Phe Ala Gln Asn Asn Val Thr Glu Ile Gln Gly Ile Pro
        355             360             365

Gly Val Ala Ser Gly Val Phe Leu Asp Asn Leu Trp Ser Thr Tyr Ser
    370             375             380

Asp Lys Gly Ala Phe Val Glu Lys Lys Gly Val Ser Ser Val Pro Val
385             390             395             400

Ser Glu Glu Ser Arg Pro Gly Gly Leu Pro Tyr Val Leu Thr Asp Ile
            405             410             415

Met Thr Tyr Phe Thr Met Leu Val Gly Ile Tyr Phe Pro Ser Val Thr
            420             425             430

Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln
        435             440             445

Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr Thr Ser Phe
    450             455             460

Ile Tyr Xaa Ser Cys Ile Val Leu Phe Gly Ala Cys Ile Glu Gly Val
465             470             475             480

Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn Leu Val Ile
            485             490             495
```

Gly Met Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe
        500   505   510

Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg
        515   520   525

Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Ile Pro Phe Leu Gln Val
    530   535   540

Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu
545   550   555   560

Thr Ala Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser Leu Asp Ser
                565   570   575

Val Ala Pro Ile Leu Ser Met Phe Phe Xaa Met Cys Tyr Met Phe Val
            580   585   590

Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg
        595   600   605

Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser
    610   615   620

Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Xaa Phe
625   630   635   640

Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly
            645   650   655

Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Asn Ala
        660   665   670

Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro His Thr Lys
    675   680   685

Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp Ser Glu Gln
    690   695   700

Cys Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln Leu Lys Ala
705   710   715   720

Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly Thr Tyr Leu
            725   730   735

Asp Lys His Val Glu Ala Gln Arg Ala Glu Glu Asn Ile Arg Ser Leu
            740   745   750

Met Ser Ala Glu Lys Thr Lys Gly Phe Cys Gln Leu Val Val Ser Ser
        755   760   765

Asn Leu Arg Asp Gly Ala Ser His Leu Ile Gln Ser Ala Gly Leu Gly
    770   775   780

Gly Met Lys His Asn Thr Val Leu Met Ala Trp Pro Glu Ala Trp Lys
785   790   795   800

Glu Ala Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp Thr Val Arg
            805   810   815

Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys Asn Ile Asp
            820   825   830

Leu Phe Pro Gln Asn Gln Glu Arg Phe Ser Asp Gly Asn Ile Asp Val
            835   840   845

Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu
    850   855   860

Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg Ile Phe Thr
865   870   875   880

Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Gln
            885   890   895

Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu Val Val Glu
            900   905   910

Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Lys Thr Leu Met
    915   920   925

Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu Ser Lys Asn
    930   935   940

Glu Arg Glu Arg Glu Ala Gln Leu Ile His Asp Arg Asn Thr Ala Ser
945   950   955   960

His Thr Thr Ala Thr Ala Arg Thr Gln Ala Pro Pro Thr Pro Asp Lys
            965   970   975

Val Gln Met Thr Trp Thr Lys Glu Lys Leu Ile Ala Glu Lys His Arg
            980   985   990

Asn Lys Asp Thr Gly Pro Ser Gly Phe Lys Asp Leu Phe Ser Leu Lys
            995   1000   1005

Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Xaa Asn
    1010   1015   1020

Gly Val Val Leu Asn Lys Ser Gln Asp Ala Gln Leu Val Leu Leu Asn
1025   1030   1035   1040

Met Pro Gly Pro Pro Lys Ser Arg Gln Gly Asp Glu Asn Tyr Met Glu
            1045   1050   1055

Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu Leu Val Arg
            1060   1065   1070

Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser
            1075   1080

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tgttattttt caagttatct tttgtattgc agtcaaaagt agctagcgta agaggaagat 120

tttgcgaggt tcccccccact tttttgttc ttaaaaagaa caaa atg cat cct cca 176
                                                   Met His Pro Pro
                                                    1

gaa acc acc acc aag atg gct tca gtt cgg ttc atg gtg aca ccg aca   224
Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met Val Thr Pro Thr
  5   10   15   20

aag atc gat gac att cca ggt ttg tca gac acc agt ccg gac ntc agc   272
Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser Pro Asp Xaa Ser
                 25   30   35

tct cga tct agt tcc cga gta aga ttt agc tcc cgg gaa agc gtg cct   320
Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg Glu Ser Val Pro
             40   45   50

gaa aca agc cgg agt gag cct atg agt gag atg tct ggg gcc acc act   368
Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser Gly Ala Thr Thr
             55   60   65

tcg ctg gca act gtt gca ctg gat cca ccc agt gac cgg act tct cac   416
Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp Arg Thr Ser His
     70   75   80

ccc cag gat gtc atc gag gac ctg agt cag aac tcc atc aca ggg gaa   464
Pro Gln Asp Val Ile Glu Asp Leu Ser Gln Asn Ser Ile Thr Gly Glu
 85   90   95   100

cac agc caa ctg tta gac gac gga cat aag aaa gct cga aat gct tat   512
His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala Arg Asn Ala Tyr
                105   110   115

```
ctc aat aat tcc aat tat gaa gaa gga gat gaa tat ttt gat aaa aat    560
Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr Phe Asp Lys Asn
            120             125             130

ttg gca ctc ttt gag gaa gaa atg gac acc aga ccg aag gtg tct tcc    608
Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro Lys Val Ser Ser
            135             140             145

ctc ctc aac cgc atg gcc aat tac act aat ctg act caa gga gca aag    656
Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr Gln Gly Ala Lys
            150             155             160

gaa cat gaa gag gca gaa aac atc act gaa ggg aaa aag aag ccc acc    704
Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys Lys Lys Pro Thr
165             170             175             180

aag acc ccc caa atg ggt acc ttc atg ggt gtc tac ctc cca tgt cta    752
Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu
                185             190             195

caa aat att ttt gga gtg atc ctt ttt tta cgc ctt aca tgg gtg gtg    800
Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val Val
                200             205             210

ggc aca gct gga gtt ctt cag gct ttt gca att gtc ctt atc tgc tgc    848
Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile Val Leu Ile Cys Cys
                215             220             225

tgc tgt aca atg ttg act gct atc tcc atg agt gcc att gcc act aat    896
Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn
230             235             240

gga gtg gtg cca gct ggg ggc tca tac ttt atg att tcc cgg gca ctg    944
Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile Ser Arg Ala Leu
245             250             255             260

ggc cca gag ttt ggt ggg gct gtt ggc ctc tgc ttt tat ctt ggt acc    992
Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr
                265             270             275

aca ttt gca gca gcc atg tac atc ctt ggt gcc att gaa atc ttt ctg   1040
Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile Glu Ile Phe Leu
                280             285             290

gtc tat atc gtc ccc cga gct gcc atc ttt cac agt gat gac gca ctc   1088
Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His Ser Asp Asp Ala Leu
                295             300             305

aag gaa tca gca gcc atg cta aat aac atg cgt gtc tac ggc aca gct   1136
Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Ala
                310             315             320

ttc ttg gtc ctt atg gta tta gtg gta ttt atc ggc gta cgc tat gtg   1184
Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly Val Arg Tyr Val
325             330             335             340
```

```
aac aag ttt gcc tca ntt ttc ctg gcc tgt gtc att gtg tcc atc ttg      1232
Asn Lys Phe Ala Ser Xaa Phe Leu Ala Cys Val Ile Val Ser Ile Leu
                345                     350                 355

gcc atc tat gct gga gcc atc aag tct tct ttt gct cct cca cac ttc      1280
Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala Pro Pro His Phe
                360                     365                 370

ccg gtc tgc atg ctg ggt aac cgc act ctt tca tca aga cac att gac      1328
Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser Arg His Ile Asp
                375                     380                 385

gtt tgc tct aag acc aag gaa att aac aac atg aca gtc cca tca aag      1376
Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met Thr Val Pro Ser Lys
                390                     395                 400

tta tgg gga ttc ttc tgt aac tcg agt caa ttt ttc aat gcc acc tgt      1424
Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe Asn Ala Thr Cys
405                     410                     415                 420

gat gaa tac ttt gtt cac aat aac gtc act tca atc cag ggc att cct      1472
Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser Ile Gln Gly Ile Pro
                425                     430                 435

gga ttg gct agt ggt ata att aca gag aat ctt tgg agt aat tac cta      1520
Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp Ser Asn Tyr Leu
                440                     445                 450

ccc aag gga gag atc atc gaa aag cct tca gcc aaa tct tct gat gtc      1568
Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys Ser Ser Asp Val
                455                     460                 465

tta ggc agc tta aac cat gaa tat gtt ctt gtt gac atc acc acc tcc      1616
Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val Asp Ile Thr Thr Ser
                470                     475                 480

ttc acg ctt ctg gtg gga atc ttc ttt ccc tct gtt aca ggt atc atg      1664
Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val Thr Gly Ile Met
485                     490                     495                 500

gct gga tca aac aga tct gga gat ctg aaa gat gct cag aag tct att      1712
Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln Lys Ser Ile
                505                     510                 515

ccg att ggt act atc ctt gcc atc ctg acc acc tcc ttt gtt tat tta      1760
Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser Phe Val Tyr Leu
                520                     525                 530

agc aat gtt gtc ctt ttt ggt gca tgt att gaa ggg gtt gtt ctc aga      1808
Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg
                535                     540                 545

gac aag ttc ggt gat gct gtg aaa ggt aat ttg gtg gta ggc acc tta      1856
Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val Val Gly Thr Leu
                550                     555                 560
```

```
tct tgg cca tcc cca tgg gtg att gtt att ggc tcc ttc ttt tca aca   1904
Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr
565                 570             575             580

tgt ggg gct gga ctt cag agc ctc aca ggt gca ccg agg ctg cta caa   1952
Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln
            585             590             595

gct att gcc aag gat aac atc ata ccg ttt ctg agg gtt ttt ggc cac   2000
Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg Val Phe Gly His
            600             605             610

agc aaa gcc aat ggg gaa cct acc tgg gct tta ctt cta act gct gcc   2048
Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Ala
            615             620             625

att gca gag ctt gga ata ctc att gcc tcc ctg gat ctt gtg gcc cca   2096
Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp Leu Val Ala Pro
            630             635             640

att ctt tcc atg ttt ttt ctc atg tgt tac ctc ttt gta aac ttg gca   2144
Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val Asn Leu Ala
645             650             655             660

tgt gcc ttg caa aca tta ctt cga aca ccc aac tgg aga ccc cga ttc   2192
Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe
            665             670             675

cgc tac tac cat tgg gcc ctt tct ttc atg gga atg agt atc tgt ctg   2240
Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met Ser Ile Cys Leu
            680             685             690

gct ctg atg ttc att tct tcc tgg tat tat gcc att gta gcc atg gta   2288
Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile Val Ala Met Val
            695             700             705

ata gct ggt atg atc tac aag tac att gaa tac caa gga gct gag aaa   2336
Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln Gly Ala Glu Lys
710             715             720

gaa tgg ggt gat ggt atc cgt ggg ctg tcc ctc agt gca gcc cgg ttt   2384
Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Phe
725             730             735             740

gct ttg ctt cga ttg gag gaa gga cct cca cac act aaa aac tgg agg   2432
Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg
            745             750             755

cct cag ttg ctt gta tta ctg aaa cta gat gaa gac tta cat gtc aag   2480
Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp Leu His Val Lys
            760             765             770

cat cct cgc ctc ctc acc ttt gcc tca cag ctc aaa gca gga aaa ggt   2528
His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys Ala Gly Lys Gly
            775             780             785
```

```
ntc act att gtg ggc tct gtc atc gtg ggg aac ttc cta gag aac tac    2576
Xaa Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe Leu Glu Asn Tyr
    790             795             800

ggt gaa gct tta gct gct gag cag acc ata aag cac cta atg gag gca    2624
Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His Leu Met Glu Ala
805             810             815             820

gag aag gta aaa gga ttc tgc cag ctg gtg gtg gcc gcc aag ctg aga    2672
Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala Ala Lys Leu Arg
            825             830             835

gag ggc att tcc cac ctc atc cag tca tgt ggc ctt ggg ggc atg aag    2720
Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met Lys
            840             845             850

cac aac acg gtg gtg atg ggc tgg cct aat ggc tgg cgt caa agc gaa    2768
His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp Arg Gln Ser Glu
            855             860             865

gat gcc cgc gct tgg aag act ttt att ggc aca gtt cga gtg aca act    2816
Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val Arg Val Thr Thr
    870             875             880

gct gcc cat ctt gca ctg ctg gtg gct aaa aac atc tcc ttc ttt ccc    2864
Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile Ser Phe Phe Pro
885             890             895             900

agc aat gtg gag caa ttt tct gag ggc aac att gat gtg tgg tgg att    2912
Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp Val Trp Trp Ile
            905             910             915

gtg cat gat ggg ggg atg ctt atg cta cta cca ttc cta ctg aaa cag    2960
Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys Gln
            920             925             930

cac aag gtg tgg cga aag tgc agc ata cgg atc ttc aca gta gcc caa    3008
His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe Thr Val Ala Gln
            935             940             945

tta gaa gac aac agt atc caa atg aag aag gac cta gcc acc ttc cta    3056
Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe Leu
    950             955             960

tat cac tta cgc att gag gcg gag gta gaa gtg gtg gag atg cat gac    3104
Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val Glu Met His Asp
965             970             975             980

agt gat ata tca gca tat act tac gag cgc act ttg atg atg gaa caa    3152
Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu Gln
            985             990             995

agg tcc cag atg ctt cgg cac atg cgg cta tcc aaa aca gag cga gac    3200
Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg Asp
            1000            1005            1010
```

```
aga gag gca caa ttg gtg aaa gac cga aac tca atg cta cga ttg acc    3248
Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Leu Arg Leu Thr
        1015                1020                1025

agc att ggc tct gat gag gac gaa gag aca gaa acc tat cag gag aag    3296
Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu Lys
        1030                1035                1040

gtg cac atg act tgg aca aaa gac aag tac atg gca tcc cgg gga caa    3344
Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly Gln
1045                1050                1055                1060

aaa gcg aag tca atg gaa gga ttc cag gac ctg ctt aac atg cgt ccg    3392
Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg Pro
                1065                1070                1075

gac cag tcc aat gtg agg cgg atg cat aca gca gtg aaa ctc aac gag    3440
Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn Glu
            1080                1085                1090

gtt ata gtt aac aag tcc cat gaa gca aag ctg gtt tta ttg aat atg    3488
Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn Met
            1095                1100                1105

cca ggg cca ccc cga aac cct gag ggt gat gaa aac tac atg gag ttc    3536
Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu Phe
        1110                1115                1120

cta gag gtg ctt acc gag gga cta gag cga gtc cta ctt gtc cgg ggt    3584
Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg Gly
1125                1130                1135                1140

ggt ggc agt gaa gtg atc acc att tat tca taacctactc tgaatgaccg      3634
Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
                1145                1150

tgcttgacct gttttcttaa aaggcctacg tcctccatgg aagtgccagc tcattactac  3694

cactcccact caactagaag cctgtgttct gtacacatca tactgaactc ttgatgagct  3754

gagcctcaag tacctgtgta aaagagctcc catctgatct gcagtcatta cagaaaaagc  3814

aaatattccc tcaacatcag aacaatgctc aagtctttca agccactgtc tgagcagtca  3874

aaggcaaatt agaattaaca agctgagcca ataaatgaat tggtaaaagg gatgctagaa   3934

attcaactga agaaaaaaag caagtcaagt acgtattcag cattaaagat gaatctcaga  3994

agtcatggtt caatgttgac actgtgagga taacaactag agacagcttc atcttactaa  4054

agaatttatg gtcaagtata tttggaccta ttatcctcgg caagccaaga tgcaaacatt  4114

ttttagctat atttctttag tatacccact gctgtaattt tatattagga tactaacttg  4174

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tccaaaaaaa aaaaaaaaaa aaaaa                                         4260
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Met His Pro Pro Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met
 1               5                  10                  15

Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser
            20                  25                  30

Pro Asp Xaa Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg
            35                  40                  45

Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser
     50                  55                  60

Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp
 65                  70                  75                  80

Arg Thr Ser His Pro Gln Asp Val Ile Glu Asp Leu Ser Gln Asn Ser
                85                  90                  95

Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala
            100                 105                 110

Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr
            115                 120                 125

Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro
     130                 135                 140

Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr
145                 150                 155                 160

Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys
                165                 170                 175
```

```
Lys Lys Pro Thr Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val Tyr
            180             185             190

Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu
        195             200             205

Thr Trp Val Val Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile Val
    210             215             220

Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala
225             230             235             240

Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile
            245             250             255

Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe
        260             265             270

Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile
        275             280             285

Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His Ser
    290             295             300

Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val
305             310             315             320

Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly
            325             330             335

Val Arg Tyr Val Asn Lys Phe Ala Ser Xaa Phe Leu Ala Cys Val Ile
            340             345             350

Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala
        355             360             365

Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser
    370             375             380

Arg His Ile Asp Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met Thr
385             390             395             400

Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe
            405             410             415

Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser Ile
            420             425             430

Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp
        435             440             445

Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys
    450             455             460

Ser Ser Asp Val Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val Asp
465             470             475             480
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Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val
                485   490   495

Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala
            500   505   510

Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser
        515   520   525

Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly
    530   535   540

Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val
545   550   555   560

Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser
                565   570   575

Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro
            580   585   590

Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg
        595   600   605

Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu
    610   615   620

Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp
625   630   635   640

Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe
                645   650   655

Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp
            660   665   670

Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met
        675   680   685

Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile
    690   695   700

Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln
705   710   715   720

Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser
            725   730   735

Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr
            740   745   750

Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp
            755   760   765

Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys
    770   775   780

Ala Gly Lys Gly Xaa Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe
785   790   795   800

Leu Glu Asn Tyr Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His
                805   810   815

Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala
            820   825   830

Ala Lys Leu Arg Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu
        835   840   845

Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp
    850   855   860

Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val
865   870   875   880

Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile
            885   890   895

Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp
        900   905   910

Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe
    915   920   925

Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe
    930   935   940

Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu
945   950   955   960

Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val
            965   970   975

Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu
        980   985   990

Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys
    995   1000   1005

Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met
    1010   1015   1020

Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr
1025   1030   1035   1040

Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala
            1045   1050   1055

Ser Arg Gly Gln Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu
        1060   1065   1070

Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val
        1075   1080   1085

Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val
    1090   1095   1100

Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn
1105   1110   1115   1120

Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu
                1125   1130   1135

Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
            1140   1145   1150

<210> 17
<211> 712
<212> DNA
<213> Homo sapiens

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<221> misc_feature
<222> (74)
<223> n=a, c, g, or t

<220>
<221> misc_feature
<222> (250)
<223> n=a, c, g, or t

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gggttatttt ttcncgttat gcatgtgcac ctttcccacc agacccaagt ggattgtcga 120

catcaaaaac accgggtggc tttgcataca cctcccccca gccagacctg tggggtattc 180

acctgatacn caacaggtgg ccgggtgtac accttttagc aatctgatcc acgctatagt 240

cgcctgataa aggtttgcct gcacgcactt ggcccaacta gaacccgtgg gacactcacc 300

agataaagga cttacctcga caggaaactg ggggctgagg ggagggaggc ttcatctgct 360

gccctgagac catggcactg agccttcagc cccggaccag aggggttagc taggtagctc 420

ttcattctga aggaaagaag tcacacaaga ttggcattgt tttgtctttt tgttttttgt 480

ttttttctct cttaaaaaat atattcacct attggtgatg cactttctag gacagtcggc 540

ttgaattctg agtagaagta ttcttagttg gggctttgtg tgtggtgtga atcaaggtta 600

ttgaaatgtg ttatttttca agttatcttt tgtattgcag tcaaaagtag ctagcgtaag 660

aggaagattt tgcgaggttc cccccacttt ttttgttctt aaaaagaaca aa 712

<210> 18
<211> 1014

<212> DNA
<213> mouse

<220>
<221> misc_feature
<222> (525)
<223> n=a, c, g, or t

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gcttcggcat cctctcgtgg ctctcctctt tctccttcct gtagtgtggg ggtattttcc 120

cgttatgcat gcgcatctct cccaccagac ccaagtggat tatcgacctc aaaaacatcg 180

ggtggctcag cacacacctc ctcccagcca gacctgtggg gtattcacct gatacacaac 240

aggtggctgg tgcacacctt tgcgcaatct gatccacgct cttatacgcc tgataagggt 300

gggcctgcat gctccgtcct cagctagaac cgtgggacac tcggcagata aaggactaac 360

tacctcatcc ggaccctggg ggttgagcag agggaggcgt caccagctgc tgtgagatca 420

tggcacggag cccacagccc tggaccaggg gagatagcta ggattctgaa agaaccaagt 480

tatacaggat tagcatcgtt ttgttcttat tttgttttct cgaanattat ttttcagtta 540

ctggtggggc actttataaa acagctggct tgaattctat acacggattc ttaattgggc 600

ctttgtgggc tgtaaatcag ggtaattgag ggtttttggt ttttttttccc cttctatttt 660

tgcaatcaga agtagctagt gtaggaggaa gagtttttgt gagctttttcc ttttttcttt 720

gtcaaaaagg aaagggggggg gaaaatgcat ccaccagaag ccaccaccaa gatgtcctca 780

gttcggttca tggtgacacc aactaagatt gatgacattc caggtttgtc agacaccagc 840

ccggacctca gctctcggtc tagttctcga gtaagattta gctcccgaga aagtgtgcca 900

gaaacaagcc gtagtgagcc tatgagcgaa ctgtctgggg ctactacttc tctggcaact 960

gttgccctag atccttccag tgaccggact tctaatcccc aggatgttac ggag 1014

<210> 19
<211> 744
<212> DNA
<213> mouse

<220>
<221> misc_feature
<222> (574)
<223> n=a, c, g, or t

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catatgcttt gaacttaagc aacaatggaa accgtccttt tgttttctga gttgacatag 120

tgccagtctt cattaaagag ggtagtttgt gaaataaagt gttccctgat ctttctcgtg 180

tgaagtaaaa ggacagatga tgagtaaggt tgagatgatg gaacccagag aagtggcaat 240

aaattaaagg aaacaagtgg gagacacagg gtggacagct cttgatgagc tcacgggctt 300

tagctttctg ccgcctggag aaactgccca gacagttgga gttctacagg ttaataacaa 360

taagctgggg tggagtgctt aagcctttta agagaatgat aaacagggcg gaaggcgtgt 420

cttcaagcgt cccactccct tggggctatg gtcacgtggg ctcagtactt cccgattccc 480

agccactgtc tccctaggct gtgctctgag tgtggaggga gagaggcagg gacgcacggg 540

aaggaaattt aaacgctgaa agcaagggtc tgtntgtaag aacaatgccg cacttcactg 600

tgaccaaggt agaagaccca gaggaggggg cagctggccc cctctctcct gagcccagct 660

cagcagaagt aaaagcccgg attcaggatc cccaagaacc aggtaagtcc tgcgcttgta 720

gcgtcggggg acccacagac tagt 744

<210> 20
<211> 52
<212> DNA
<213> Homo sapiens

<400> 20
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<210> 21
<211> 95
<212> DNA
<213> Homo sapiens

<400> 21
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aggagtatga tggcaagaac atggccttgt ttgag 95

<210> 22
<211> 132
<212> DNA
<213> Homo sapiens

<400> 22
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aacctgcccc agggaagtag ggagcatgaa gaggcagaaa acaatgaggg tggaaaaaag 120

aagccggtgc ag 132

<210> 23
<211> 147
<212> DNA
<213> Homo sapiens

<400> 23
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gtcatcctct tcctgcggct cacctgggtg gtgggcattg caggcatcat ggagtccttc 120

tgcatggtgt tcatctgctg ctcctgt   147

<210> 24
<211> 55
<212> DNA
<213> Homo sapiens

<400> 24
acgatgctca cggccatctc catgagtgca attgcaacga atggtgttgt gcctg   55

<210> 25
<211> 131
<212> DNA
<213> Homo sapiens

<400> 25
ctggtggctc ctactacatg atttccaggt ctctgggccc agagtttggg ggtgccgtgg 60

gcctctgctt ctacctgggc actacctttg caggagccat gtacatcctg ggcaccatcg 120

aaatcctgct g   131

<210> 26
<211> 242
<212> DNA
<213> Homo sapiens

<400> 26
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gccatgctga acaacatgcg tgtttacggc acctgtgtgc tcacctgcat ggccactgtg 120

gtgtttgtgg gtgtcaagta tgtcaacaag tttgcccttg tcttcctggg ttgtgtcatc 180

ctctccatcc tggccatcta tgctggggtc atcaagtctg ccttcgaccc acccaacttc 240

cc   242

<210> 27
<211> 212

<212> DNA
<213> Homo sapiens

<400> 27
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ggcttgggaa ggaaatgaga cggtgaccac acggctatgg ggccttttct gctcctctcg 120

cttcctcaac gccacctgtg atgaatactt cacccgaaac aatgtcacag agatccaggg 180

catccctggt gctgccagtg gcctcatcaa ag 212

<210> 28
<211> 171
<212> DNA
<213> Homo sapiens

<400> 28
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tgacctccta cttcaccctg ctggttggca tctacttccc ctcagtcaca g 171

<210> 29
<211> 99
<212> DNA
<213> Homo sapiens

<400> 29
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ctggcaccat cctggccatc gccaccacct ctgctgtct 99

<210> 30
<211> 58
<212> DNA
<213> Homo sapiens

<400> 30
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<210> 31
<211> 175
<212> DNA
<213> Homo sapiens

<400> 31
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ggtaattgtc atcggatcct tcttctccac ctgtgggggct gggctgcaga gcctcacggg 120

ggccccacgc ctgctgcagg ccatctcgag ggatggcatt gtgcccttcc tgcag 175

<210> 32
<211> 119
<212> DNA
<213> Homo sapiens

<400> 32
gtctttggcc atggcaaggc caatggagag ccgacctggg ccctgctcct gactgcctgc 60

atctgcgaga ttggcatcct cattgcatcc ctcgacgagg tggcccccat cctctctat 119

<210> 33
<211> 99
<212> DNA
<213> Homo sapiens

<400> 33
gttcttcctg atgtgctaca tgtttgtgaa tctggcctgt gcagtgcaga cgctgctgag 60

gacacccaac tggaggccac gctttcgata ttaccactg 99

<210> 34
<211> 120
<212> DNA
<213> Homo sapiens

<400> 34
gaccctctcc ttcctgggca tgagcctctg cctggccctc atgttcatct gctcctggta 60

ttatgcactg gtagccatgc tcattgctgg actcatctac aagtacattg agtaccgtgg 120

<210> 35
<211> 105
<212> DNA
<213> Homo sapiens

<400> 35
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cctcttacgc ctggaggaag ggcccccaca caccaagaac tggag 105

<210> 36
<211> 169
<212> DNA
<213> Homo sapiens

<400> 36
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gctctcactg acctcccagc tgaaggcagg gaagggcctg accatcgtgg gctctgtcct 120

tgagggcacc tttctggaaa atcatccaca ggcccagcgg gcagaagag 169

<210> 37
<211> 196
<212> DNA
<213> Homo sapiens

<400> 37
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tccaacttgc gtgatggcgt gtcccatctg atccagtccg ggggcctcgg ggggctgcag 120

cacaacactg tgcttgttgg ctggccccgc aactggcgcc agaaggaaga tcatcagacg 180

tggaggaact tcattg   196

<210> 38
<211> 170
<212> DNA
<213> Homo sapiens

<400> 38
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tgtttcctgg gaaccctgag cgcttctctg agggcagcat cgacgtttgg tggattgtgc 120

acgatggagg catgctcatg ctgctgccct tcctgctgcg gcaccacaag   170

<210> 39
<211> 132
<212> DNA
<213> Homo sapiens

<400> 39
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cagatgaaga aggatctgac cacatttctg tatcatttac gcatcactgc ggaggtcgag 120

gtggtggaga tg   132

<210> 40
<211> 231
<212> DNA
<213> Homo sapiens

<400> 40
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cagatcctca aacagatgca tttaaccaag aatgagcggg agcgggagat ccagagtatc 120

acagatgagt cacgaggctc aatccggaga aagaatccag ccaacacgcg gctccgcctg 180

aacgtcccag aagagacggc tggtgacagt gaagagaagc cagaggagga g   231

<210> 41
<211> 215
<212> DNA
<213> Homo sapiens

<400> 41
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gaggagcctg aggggaagg ggagacagat ccggagaagg tgcatctcac ctggaccaag 120

gacaagtcgg tggcagagaa gaataagggc cccagtcctg tctcctctga gggcatcaag 180

gacttcttca gcatgaagcc ggagtgggag aactt 215

<210> 42
<211> 134
<212> DNA
<213> Homo sapiens

<400> 42
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gaaatcccgg gacgccaagc ttgttttgct caacatgcct gggcctcccc gcaaccgcaa 120

tggtgatgaa aact 134

<210> 43
<211> 92
<212> DNA
<213> Homo sapiens

<400> 43
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gcggccgcga ggtcatcacc atctactcct ga 92

<210> 44
<211> 290
<212> DNA
<213> Homo sapiens

<400> 44
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cccctctccc ttctcaggtg atggcaaccc caaggaaagc agtcccttca tcaacagcac 120

cgacacagag aagggaaagg agtatgatgg caagaacatg gccttgtttg aggtgggctg 180

ctatggctgt tgggccccca cctacaattc attatcctga ttcatcagct gctctctccc 240

tccctcccta tagagcaata ccctcgtctc cacccctccc ttgagtctac 290

<210> 45
<211> 259
<212> DNA
<213> Homo sapiens

<400> 45
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agcactgaca ccctccctcc ataggaggag atggacacca gccctatggt gtcctccttg 120

ctcagtggcc tggccaacta caccaacctg ccccagggaa gtagggagca tgaagaggca 180

gaaaacaatg agggtggaaa aaagaagccg gtgcaggtga ggacctcggg ggatgagaaa 240

tggaagaaaa gggacggat   259

<210> 46
<211> 315
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (294)
<223> n=a, c, g, or t

<400> 46
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cagagactga tgctggcctc cctggcaggc cccacgcatg ggcaccttca tgggcgtgta 120

cctgccgtgc ctgcagaaca tctttggcgt catcctcttc ctgcggctca cctgggtggt 180

gggcattgca ggcatcatgg agtccttctg catggtgttc atctgctgct cctgtgtgag 240

tgacacccct cccctcacca ccccctgaca gctggggctt ggcagaggcc tggngggtgg 300

gaggtgggag gatgg   315

<210> 47
<211> 249
<212> DNA
<213> Homo sapiens

<400> 47
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cccagccacc gctctgatga tctctttcct cacagacgat gctcacggcc atctccatga 120

gtgcaattgc aacgaatggt gttgtgcctg gtaggtgact ggggctttgt ggggagggag 180

gatggctggg tggaaggagg gatagtgccc tgggctttgg gggacatcaa ggcccaagag 240

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<210> 48
<211> 305
<212> DNA
<213> Homo sapiens

<400> 48
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acccccttacg gcagcccagt gcccccgacc ctctcgctga taccagattc tccctgcagc 120

tggtggctcc tactacatga tttccaggtc tctgggccca gagtttgggg gtgccgtggg 180

cctctgcttc tacctgggca ctacctttgc aggagccatg tacatcctgg gcaccatcga 240

aatcctgctg gtaagagagg ctgaggagga ggtgtggaac cccaggttgt cagtcagtta 300

atcag   305

<210> 49
<211> 503
<212> DNA
<213> Homo sapiens

<400> 49
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catgtagtgc aaagggctgc tgacttaggt atctgttctt cctgcccctt tcccacaggc 120

ttacctcttc ccagccatgg ccatcttcaa ggcagaagat gccagtgggg aggcagcagc 180

catgctgaac aacatgcgtg tttacggcac ctgtgtgctc acctgcatgg ccactgtggt 240

gtttgtgggt gtcaagtatg tcaacaagtt tgcccttgtc ttcctgggtt gtgtcatcct 300

ctccatcctg gccatctatg ctggggtcat caagtctgcc ttcgacccac ccaacttccc 360

gtgagtgcaa ggaatcgtcc tcctacctcc ctggccctgt ttcagagtct ctgccaaact 420

cccccctccct gcccctcaga atctcagagt ggtgtgggtt gggagtagct tcccttggga 480

gggaaaatct ctcttagttt ggg   503

<210> 50
<211> 387
<212> DNA
<213> Homo sapiens

<400> 50
ggggttgatc ttgaccctga cttttttgccc cctcccacct cctggtccca gagctctggt 60

ccccttatgg ctggcctccc cctgagcatt ctgtctcccc acagagaacc tctggagctc 120

ctacctgacc aagggcgtga ttgtggagag gagtgggatg acctcggtgg cctggccga 180

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tggcactcct atcgacatgg accaccctta tgtcttcagt gatatgacct cctacttcac  240

cctgctggtt ggcatctact tcccctcagt cacaggtgaa ggggagctca gagagggaag  300

actctgcctg tgagtggatg gggaagagag agtcgatgat gatgttggga atttcttagt  360

ccaaaaaccc catcatgaaa gcaaccg                                       387


<210> 51
<211> 313
<212> DNA
<213> Homo sapiens

<400> 51
atgttaggac tagatcccag actcactgac cctgagggtg gtgccctttt ttctcatctg   60

tctggtctcc tgtggccctg gcttgagtcc tagctgcact tctgttttgc agggatcatg  120

gctggttcta accgctctgg ggacctgagg gatgcccaga agtcaatccc cactggcacc  180

atcctggcca tcgccaccac ctctgctgtc tgtatcctgc acagctgtgc tgggaccacc  240

ctcgggggag ggcaagaggg agggcagctg aacttgctgc cttacctgct ggtgcaggaa  300

gggtggggag ggg                                                      313


<210> 52
<211> 132
<212> DNA
<213> Homo sapiens

<400> 52
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aagataattg gggttgatcc tattctgggg gaggggtggg tatagaaggc tgagttctgg  120

gaaacagacc ca                                                       132


<210> 53
<211> 365
<212> DNA
<213> Homo sapiens

<400> 53
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gaatggcaac ctcgtggtgg cactctggc ctggccatct ccatgggtaa ttgtcatcgg  180

atccttcttc tccacctgtg gggctgggct gcagagcctc acgggggccc cacgcctgct  240

gcaggccatc tcgagggatg gcattgtgcc cttcctgcag gtcagtgtgg gagaagaaca  300
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cataa                                                                 365


<210> 54
<211> 209
<212> DNA
<213> Homo sapiens

<400> 54
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tcagtcccat gatgattgct cttccccag gtctttggcc atggcaaggc caatggagag 120

ccgacctggg ccctgctcct gactgcctgc atctgcgaga ttggcatcct cattgcatcc 180

ctcgacgagg tggcccccat cctctctat                                      209


<210> 55
<211> 209
<212> DNA
<213> Homo sapiens

<400> 55
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gacacccaac tggaggccac gctttcgata ttaccactgg tgggtgctct gtccccacac 120

ttccactgag ccacttgctc acctccacgc caatcctcac cttactccag tccatcccct 180

ctgggtctaa ggaccccaaa cctgaagag                                      209


<210> 56
<211> 336
<212> DNA
<213> Homo sapiens

<400> 56
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ggtatatgga ttatgtgact ctgcacactc ttcaggccac agctgctggt gctggtgcgt 120

gtggaccaag accagaatgt ggtgcacccc cagctgctct cactgacctc ccagctgaag 180

gcagggaagg gcctgaccat cgtgggctct gtccttgagg gcacctttct ggaaaatcat 240

ccacaggccc agcgggcaga agaggtgagc agaggccctg gttgggcttg ggaaaaggtc 300

aggacactta ggaagacagt ctctatcctt ttgtac                              336


<210> 57
<211> 272
<212> DNA
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<213> Homo sapiens

<400> 57
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tggcgtgtcc catctgatcc agtccggggg cctcggggg ctgcagcaca acactgtgct 180

tgttggctgg ccccgcaact ggcgccagaa ggaagatcat cagacgtgga ggaacttcat 240

tggtaacgct attgggggct ggggacagaa ga 272

<210> 58
<211> 328
<212> DNA
<213> Homo sapiens

<400> 58
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tttcctggga accctgagcg cttctctgag ggcagcatcg acgtttggtg gattgtgcac 180

gatggaggca tgctcatgct gctgcccttc ctgctgcggc accacaaggt gagttgtgtg 240

cgtgagtgta tgcacgtgtg agtgtgtgta tgcatgtatg catttgtgtg catatgtgca 300

caactgcagg tcagactcag gggctctg 328

<210> 59
<211> 303
<212> DNA
<213> Homo sapiens

<400> 59
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cgcctgcagg tctggcggaa gtgcaagatg cgtatcttca ctgtggccca gatggatgac 120

aatagcatcc agatgaagaa ggatctgacc acatttctgt atcatttacg catcactgcg 180

gaggtcgagg tggtggagat ggtgagtccc caggagacac cgctggggtt ccacctggcc 240

ctctttcctc ttggccccag caccaagtag ggcaactcta acacccatca gcttatgatg 300

cta 303

<210> 60
<211> 295
<212> DNA
<213> Homo sapiens

<400> 60
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cagatcctca aacagatgca tttaaccaag aatgagcggg agcgggagat ccagagtatc 120

acagatgagt cacgaggctc aatccggaga aagaatccag ccaacacgcg gctccgcctg 180

aacgtcccag aagagacggc tggtgacagt gaagagaagc cagaggagga ggtgtgcagc 240

ttgggtggtt tggccccaac cagtgggagc agagcccttg gcctccaaag gactc   295

<210> 61
<211> 400
<212> DNA
<213> Homo sapiens

<400> 61
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gcagctgatc cacgatcaga gtgctcccag ctgccccagc agctccccgt ccccagggga 120

ggagcctgag ggggaagggg agacagatcc ggagaaggtg catctcacct ggaccaagga 180

caagtcggtg gcagagaaga ataagggccc cagtcctgtc tcctctgagg gcatcaagga 240

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<210> 62
<211> 346
<212> DNA
<213> Homo sapiens

<400> 62
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tctacccccc cggctcacgc ggtctccact cctccttcct gccgcaggaa ccagtccaac 120

gtgcggcgca tgcacacggc cgtgcggctg aacgaggtca tcgtgaagaa atcccgggac 180

gccaagcttg ttttgctcaa catgcctggg cctccccgca accgcaatgg tgatgaaaac 240

tgtatcctgg aattaaaatt gggggaaaga gggaggtgga cgtcaggaa tctgggtcct 300

gtccctggga tggaagagct gagctgttcc tgcctccgga tcagca   346

<210> 63
<211> 2733
<212> DNA
<213> Homo sapiens

<400> 63

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aaggagaccg ggtctttctc cttgaccggc tctcagacat ggagtttctc gaggtcctca 120

cagagcacct ggaccgggtg atgctggtcc gcggcggcgg ccgcgaggtc atcaccatct 180

actcctgaga accaggtcct gccacccggg cccgagcgcg cccggcccgc ggctccggag 240

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gcgccccgcc gcgcagagac cagagctcct cagtgccagt ttggcccctg ggtcttcgct 420

gccctttttc taagcccggc ctcgtctcgc cggaggagac gctgcaataa aggttgggag 480

aaggcgcgga aaggagagga gctggggcct tggggacccc caggtagtcc atgcggccca 540

ttcctcccct tcccactccc gccgcggtcc tcgctctgcg ctcctccggc gctgctccct 600

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ccttctcgcc gagccgtggg gcgcgggcgg ccgagcctat acatagtgta caggagacat 720

cgcgtgtatt tttaacgtcc ccatatttat gtgactagaa gcgcaacaga cttctcgcca 780

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aatattccag agctgatgtg atgggctgtg cagaaggggg ctgtatcaac atcaattagg 2160

gaaccaaagt tgcactatct gggcccagat tgtctggttg caagagcaa agtttccgtt 2220

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ttatgaatgt tatcacaagt cattcatcaa gttatcttta taatcactgt agttagatgt 2340

ttcatgtcca ttcaagtgac ttttattctg agtgcaatat ttcaatagcc ttgtagtgat 2400

aactagtgtt gcttttgttt agatgatcta tgtgcagggc aatgcaatga agttgaaacc 2460

ccttggtaat aggagaggtt gcaaaccaaa tcaagagtat ttattactat tactgctatt 2520

attattaggc ctgcctttaa ttttcagtgt aagtgttcag tatgccgcat cctgcctcag 2580

tattgatctt gtgttctttg tgccaatatg aaaaggagag ggttggttct ttcctttatt 2640

gttgaatgct cccatttaat gctttatggc ttttactgta ttactttttt agactcccgt 2700

ctgcacaaaa tgcaataaaa ataattttat taa                                 2733
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<210> 64
<211> 304
<212> DNA
<213> Homo sapiens

<400> 64
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actgtgagtt gttttttccct caactaggag atggaaatcc aagagaaaac agcccattcc 120

tcaacaatgt cgaggtggaa caagagagct tctttgaagg gaagaacatg gcacttttcg 180

aggtaacttt acttttaga agaagaaggt gccagggccg ttgctttgat gtggaaaagt 240

aaaggagccc ctgggggccc ccaggccggg gcctcccaca ggactggaca ccacgtggaa 300

ggaa                                                                  304
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<210> 65
<211> 268
<212> DNA
<213> Homo sapiens

<400> 65

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gagatggaca gtaaccccat ggtgtcctcg ctgctcaaca agctggccaa ctacaccaac 120

ctgagccagg gcgtggtgga gcacgaggag gacgaggaga ccggcggcg ggaggccaag 180

gttctgccac cctgcccgtg cccgcccagt ccccgcccag tccccgcccc gtgtgtcccg 240

gcagggttag atcacgccgg caaggcag 268

<210> 66
<211> 180
<212> DNA
<213> Homo sapiens

<400> 66
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ttttgcagac aatgctgacc gccatttcca tgagtgcgat cgctaccaac ggtgtggtcc 120

caggtaaggg gtgcccgcca gccgcggccc tgagtcctgt tagaggagtc tgtgttttgc 180

<210> 67
<211> 272
<212> DNA
<213> Homo sapiens

<400> 67
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cgcctttgtc tccgcagctg gcgggtccta ctacatgata tcgcgctcgc tgggacccga 120

gtttggaggc gctgtcggcc tctgcttcta cctgggcacg acgtttgcag gggccatgta 180

tattttgggg accatcgaga tttttctggt aagtgtgctg ctttggaagg gttcccaccc 240

cacagtctgt ggcaggatgc caaggggccc tg 272

<210> 68
<211> 359
<212> DNA
<213> Homo sapiens

<400> 68
ttgcgggagg gacgggcact ggggagttgt gtccggggac ggcctcccga cctgccttgt 60

tcccacagac gtacatctcc ccgggtgcgg ccatcttcca ggcggaggct gcaggtggcg 120

aggcggccgc catgctgcac aacatgcgtg tgtacggcac gtgcacgctc gtgctcatgg 180

ccctggtggt cttcgtgggc gtcaagtatg tcaacaagct ggcgctggtc ttcctggcct 240

gcgtcgtgct gtccatcctg gccatctatg ccggcgtcat caagtctgcc ttcgacccc 300

cggacatccc gtgagtctcg gggcctctga gccgagggtg ggtgtggggc tggggccag 359

<210> 69
<211> 378
<212> DNA
<213> Homo sapiens

<400> 69
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tgccgtgcct ccctgtcccg cccagggtct gcctcctggg gaaccgcacg ctgtcacggc 120

gcagcttcga tgcctgcgtc aaggcctacg gcatccacaa caactcagcc acctccgcgc 180

tctggggcct cttctgcaac ggctcccagc ccagcgccgc ctgtgacgag tacttcatcc 240

agaacaacgt caccgaaatc cagggcatcc cgggcgcggc cagtggtgtc ttcctgggtg 300

aggctcacag ggctgcagct ggagctgggg ggtggcgggg gcagcaggcg ctggccctgg 360

tggctgctct cgccttag 378

<210> 70
<211> 320
<212> DNA
<213> Homo sapiens

<400> 70
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ccttgcccgg cagagaacct gtggagtacg tacgcgcacg cgggggcgtt tgtggagaag 120

aaaggtgtgc cctcggtgcc cgtggcagag gagagccgtg ccagcacact gccctacgtg 180

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ggtgagcccg ctgctccagg cttcccctcc tctttctttc tctccctctc ttttttgagg 300

caaggtcttg ctctgtcacc 320

<210> 71
<211> 302
<212> DNA
<213> Homo sapiens

<400> 71
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tgactcctca gatgggtctt tgcagcattt tcatgttcac aggtatcatg gcgggttcaa 120

accggtccgg ggacctcaag gatgcacaga agtccatccc cacggggacc atcctggcca 180

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cctgggggga ggcccccatg ccctccccgg ctcagcatca taccctcggc caccagcatg 300

tg   302

<210> 72
<211> 304
<212> DNA
<213> Homo sapiens

<400> 72
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ggggaggccc tgcaggggaa cctggtcatc ggcatgctgg cctggccctc cccctgggtc 120

atcgtcatcg gctccttctt ctccacctgc ggtgccggcc tgcagaccct cacgggggca 180

ccgcgcctac tgcaggccat gcccgtgac ggcatcgtcc ccttcctgca ggtgagtccc 240

gcaccctcgt acggggggac cctggaaggt cagggtcggg ggctctcctc ccctgtttta 300

tcct   304

<210> 73
<211> 263
<212> DNA
<213> Homo sapiens

<400> 73
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tctccctgca ggtgtttggc cacgggaagg ccaacgggga gcccacgtgg gcgctgctgc 120

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tcctctccat gtgagccccc acaggacggg gacctgggga tgggtgtatg ggcctggagc 240

gtggggcagt gtggatggga ggt   263

<210> 74
<211> 249
<212> DNA
<213> Homo sapiens

<400> 74
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tcctcatgtg ctacctgttc gtgaacctgg cctgcgccgt gcagaccctg ctacgtaccc 120

ccaactggcg tccacgcttc aagttctacc actggtgagg ctactcagca cgggcgtgag 180

gagccccaca ggctgggaca ctgggtgcct ctgccactgg tgaggccgct cagcacaggc 240

gtcaggagc   249

<210> 75
<211> 264
<212> DNA
<213> Homo sapiens

<400> 75
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cctttctggg tatgagcctg tgcctggcgc tgatgttcat ctgctcctgg tactacgcgc 120

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tgtcagcccc ccttacagac ccggcgcacg ggagggcggg cccctctcat gctatgcctg 240

gggcagctcc ctggaggggc ctcc   264

<210> 76
<211> 290
<212> DNA
<213> Homo sapiens

<400> 76
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acgcggctgg acaaacccg acttcctttc ccacagggcc gagaaggagt ggggcgatgg 120

catccgtggc ctatccctga cgccgcccg ctacgccctg ctgcgcgtgg agcacggtcc 180

cccccacacc aagaactgga ggtgagcacc gcccatgccc cgtggtcctc agacgcacag 240

aagagctgtt tctgaggtcg gcctttgagt ggggaccttt gagtctcagg   290

<210> 77
<211> 400
<212> DNA
<213> Homo sapiens

<400> 77
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cctgttgatg ggccgtgccc tggtaagcgt tgccgtggta acagccgccc caccctggct 120

gcaggcccca ggtgctggtg atgctgaacc tggacgcgga gcaggccgtg aagcacccc 180

gcctgctgtc cttcacgtcg cagctgaagg ccggcaaggg cctgaccatc gtgggctcgg 240

tgctggaggg gacgtacctg gacaagcaca tggaggctca gcgggccgag gaggtgggcc 300

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<210> 78
<211> 372
<212> DNA
<213> Homo sapiens

<400> 78
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ccaacctgtc ctgtctcccg cagaacatac ggtccctaat gagcacagag aagaccaagg 120

gcttctgcca gctggtggtc tcgtccagcc tgcgggatgg catgtcccac ctgatccagt 180

cggccggcct gggcggcctg aagcacaaca cggtgctcat ggcctggccc gcatcctgga 240

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tcggcatccc ctcaccgtcc cctctgtgtc ctctcagtgt cccctcgctg tcccctcgct 360

gtcccctcac tg                                                     372


<210> 79
<211> 321
<212> DNA
<213> Homo sapiens

<400> 79
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ggtggccaag aacgtcgact cgtttccgca aaaccaggag cgcttcggcg ggggccacat 180

cgacgtgtgg tggatcgtgc acgacggcgg catgctcatg ctgctgccct tcctgctgcg 240

ccagcacaag gtggggcgtg cgacggggac acgccagccg gagcacggcc accccacgtg 300

ctgcgggccg ggacgggctc c                                           321


<210> 80
<211> 262
<212> DNA
<213> Homo sapiens

<400> 80
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tgggaacttt ctaggttgaa aacgacatat ctgctttcac ctacgagagg acactaatga 120

tggagcagag gtcgcagatg ctgaagcaga tgcagctgtc caagaacgag caggagcgag 180
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tgagtctttt ctgggaccct cc 262

<210> 81
<211> 318
<212> DNA
<213> Homo sapiens

<400> 81
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accgagtccc gggcccgcca ggcccagctg atccacgaca ggaacaccgc gtcccacacc 120

gcggcggcag ccaggaccca agcgccgcct acgccagaca aggtgcagat gacctggacc 180

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gcagtgctgg cccggcag 318

<210> 82
<211> 299
<212> DNA
<213> Homo sapiens

<400> 82
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caatggcgtc gtcctcaaca agtcccagga tgcgcagctg gtcctgctca acatgccagg 180

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<213> Homo sapiens

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aaaaaaaa   2168

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<211> 489
<212> DNA
<213> Homo sapiens

<400> 84
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ccaccaccaa gatggcttca gttcggttca tggtgacacc gacaaagatc gatgacattc 240

caggtttgtc agacaccagt ccggacctca gctctcgatc tagttcccga gtaagattta 300

gctcccggga aagcgtgcct gaaacaagcc ggagtgagcc tatgagtgag atgtctgggg 360

ccaccacttc gctggcaact gttgcactgg atccacccag tgaccggact tctcaccccc 420

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<211> 291
<212> DNA
<213> Homo sapiens

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cctagtttag cagacataaa agcccggatt caggattcag atgaaccagg tgagtacgca 180

acttgggagc ttttggaacc tataaaatgt ttcatgaaag aagtaactag gatatcaaaa 240

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<210> 86
<211> 299
<212> DNA
<213> Homo sapiens

<400> 86

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aactccatca caggggaaca cagccaactg ttaggtatag tattactgtg gggattgact  180

ttatccaaag tcacccttaa ctcatttatc ctaacagaca ttactccctt ctctgattct  240

attttctatc ccctccttt ctacttccca cccaacaact ttttcctgc tgtttctat  299


<210> 87
<211> 366
<212> DNA
<213> Homo sapiens

<400> 87
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gtgctgatgt ttcttcgtca gaaaccagtg agaaactaac ttggtctact ttttttttc  120

cagacgacgg acataagaaa gctcgaaatg cttatctcaa taattccaat tatgaagaag  180

gagatgaata ttttgataaa aatttggcac tctttgaggt catattttgg agaaaactat  240

ggactcgagc actttaggaa cagagatctc atgatagcca tattttaccc catttggttt  300

aaaaatttta caagctggat aatttaatgt taaaagaaaa tattgtaact tgttattata  360

gtaaat                                                             366


<210> 88
<211> 342
<212> DNA
<213> Homo sapiens

<400> 88
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tggctttata ggaagaaatg gacaccagac cgaaggtgtc ttccctcctc aaccgcatgg  120

ccaattacac taatctgact caaggagcaa aggaacatga agaggcagaa aacatcactg  180

aagggaaaaa gaagcccacc aaggtgaggc ctcagaataa caaggaatac atagaaagag  240

ccctgtatat aagaaagaag gaaataccta aggcaccatt ctgtgttcag cagctattta  300

ttaaatgctt gagaggtgcc tggaactgtt ctgggcacca gc                     342


<210> 89
<211> 238
<212> DNA
<213> Homo sapiens

<400> 89
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gtggccatgt gctgcacatg tgtgtgagtc tcccccggcc aggtgtggct gtgccttc 238

<210> 90
<211> 167
<212> DNA
<213> Homo sapiens

<400> 90
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gttgactgct atctccatga gtgccattgc cactaatgga gtggtgccag gttagtaggt 120

caaggttgta tttcaagatt tatcagtgtt gactctgtgt ttatgct 167

<210> 91
<211> 359
<212> DNA
<213> Homo sapiens

<400> 91
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aatgacttca ttgtggtcta taatatagaa gaaatattga tttaggttta ttctttgcta 300

tgaaagcttc tgagagatca gctgtgggaa taaatcaggt gattgactgc caacgtcag 359

<210> 92
<211> 402
<212> DNA
<213> Homo sapiens

<400> 92
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tcacagtgat gacgcactca aggaatcagc agccatgcta aataacatgc gtgtctacgg 180

cacagctttc ttggtcctta tggtattagt ggtatttatc ggcgtacgct atgtgaacaa 240

gtttgcctca cttttcctgg cctgtgtcat tgtgtccatc ttggccatct atgctggagc 300

catcaagtct tcttttgctc ctccacactt cccgtacgtg tctgtctctc tgcctagcca 360

tccttattgg gtagtaattg aaaatatctg gtggtgtgat aa   402

<210> 93
<211> 363
<212> DNA
<213> Homo sapiens

<400> 93
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cgtttgctct aagaccaagg aaattaacaa catgacagtc ccatcaaagt tatggggatt 180

cttctgtaac tcgagtcaat ttttcaatgc cacctgtgat gaatactttg ttcacaataa 240

cgtcacttca atccagggca ttcctggatt ggctagtggt ataattacag gtaagttagg 300

gagttattgg acaagttttt tcctattttc tggggaaaat aggccttgtc atcttagatt 360

cct   363

<210> 94
<211> 291
<212> DNA
<213> Homo sapiens

<400> 94
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actgcagaga atctttggag taattaccta cccaagggag agatcatcga aaagccttca 120

gccaaatctt ctgatgtctt aggcagctta aaccatgaat atgttcttgt tgacatcacc 180

acctccttca cgcttctggt gggaatcttc tttccctctg ttacaggtaa acacataggc 240

tgttgtatat tttagaagct gtcagaccca tggagtgatt tttctcagga g   291

<210> 95
<211> 250
<212> DNA
<213> Homo sapiens

<400> 95
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gttttttccc ccttatctct aaaggtatca tggctggatc aaacagatct ggagatctga 120

aagatgctca gaagtctatt ccgattggta ctatccttgc catcctgacc acctcctttg 180

tttgtatcct ttttatggat ccagtctgag tcttagtcat aggagcatcc agtagaacta 240

agatgatcag   250

<210> 96
<211> 205
<212> DNA
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<400> 96
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ggttgttctc agagacaagt gagtaatgaa tttctttgta acaattatgt gtgtgtctgc 180

catgacttct gatcattcca catag   205

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<211> 449
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<213> Homo sapiens

<400> 97
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gctcacttgc tgaaagccgc ccgcccgcct gcccgcctgc ctgcaggttc ggggaggccc 180

tgcaggggaa cctggtcatc ggcatgctgg cctggccctc cccctgggtc atcgtcatcg 240

gctccttctt ctccacctgc ggtgccggcc tgcagaccct cacgggggca ccgcgcctac 300

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agccgtgtgt gggacgcatg cccgcggct   449

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<211> 304
<212> DNA
<213> Homo sapiens

<400> 98
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cccatgggtg attgttattg gctccttctt ttcaacatgt ggggctggac ttcagagcct 180

cacaggtgca ccgaggctgc tacaagctat tgccaaggat aacatcatac cgtttctgag 240

ggtgagtgac cttttattat gccctcttct ttttttccca gctttaatga gaaacagtgt 300

ggtc

<210> 99
<211> 249
<212> DNA
<213> Homo sapiens

<400> 99
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acaggttttt ggccacagca aagccaatgg ggaacctacc tgggctttac ttctaactgc 120

tgccattgca gagcttggaa tactcattgc ctccctggat cttgtggccc caattctttc 180

catgtaagag ccagtgattc tcttcagtta ttcttgctta aatgataaat aatacatgtt 240

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<210> 100
<211> 255
<212> DNA
<213> Homo sapiens

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ggcatgtgcc ttgcaaacat tacttcgaac acccaactgg agaccccgat tccgctacta 180

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<211> 251
<212> DNA
<213> Homo sapiens

<400> 101
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tcttcctggt attatgccat tgtagccatg gtaatagctg gtatgatcta caagtacatt 180

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<211> 313
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<213> Homo sapiens

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gtgatggtat ccgtgggctg tccctcagtg cagcccggtt tgctttgctt cgattggagg 180

aaggacctcc acacactaaa aactggaggt aaagaaatca acactagcag tatttggcac 240

atggttaaca cacaacaaat atgtgttttg ttgattttag gataaggaaa ccatatgtgg 300

ctcaaggaat tgg   313

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<211> 305
<212> DNA
<213> Homo sapiens

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gtagt   305

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<211> 323
<212> DNA
<213> Homo sapiens

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cgccaagctg agagagggca tttcccacct catccagtca tgtggccttg ggggcatgaa 180

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gtatatagtt aatgtctgtc acc   323

<210> 105
<211> 312
<212> DNA

<213> Homo sapiens

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gcttattctt ttttctccct aggcacagtt cgagtgacaa ctgctgccca tcttgcactg 120

ctggtggcta aaaacatctc cttctttccc agcaatgtgg agcaattttc tgagggcaac 180

attgatgtgt ggtggattgt gcatgatggg gggatgctta tgctactacc attcctactg 240

aaacagcaca aggtatttta tacaactttt tttttacaaa agtctttctc ccttctgtcc 300

tggttcacag ga 312

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<211> 335
<212> DNA
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tcttttctgg tttgggaaat ttttcagatc taaat 335

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<212> DNA
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gatgcttcgg cacatgcggc tatccaaaac agagcgagac agagaggtga gacattactg 180

catcaatcca atccgtgctc tctaaagtct gtcactgaaa gggatgatac tgggc 235

<210> 108
<211> 335
<212> DNA
<213> Homo sapiens

<400> 108
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gacttggaca aaagacaagt acatggcatc ccggggacaa aaagcgaagt caatggaagg 240

attccaggac ctgcttaaca tgcgtccgta agttttccca ctcccaagtt tatcataaaa 300

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<210> 109
<211> 274
<212> DNA
<213> Homo sapiens

<400> 109
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caacgaggtt atagttaaca agtcccatga agcaaagctg gttttattga atatgccagg 180

gccaccccga aaccctgagg gtgatgaaaa ctgtatcctt ccaagagtg gggcttccag 240

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<210> 110
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<212> DNA
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<400> 110
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tgagcctcaa gtacctgtgt aaaagagctc ccatctgatc tgcagtcatt acagaaaaag 360

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aagaatttat ggtcaagtat atttggacct attatcctcg gcaagccaag atgcaaacat 660
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<210> 111
<211> 3422
<212> DNA
<213> Homo sapiens

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<223> n=a, c, g, or t

<400> 111
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ccgccggctg ggttcagcca ggaacagtgt ggctggacag acggctgctg gggaagggac 180

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gaataagccc tgggtggacg cttnagcccc ttgttgcatg cacaagccaa gtgctgtgtg 900

cacgctggga actggagcta tgtactgggn tttggagtga cagcttccac aagggcccaa 960

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tnaggtgtgg gggcttgcat ggcgttgggc cgccccgagc cacttgcccc gcccccagga 1140

ccctgtcctt tctgggtatg agcctgtgcc tggcgctgat gttcatctgc tcctggtact 1200
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gcaggcccca ggtgctggtg atgctgaacc tggacgcgga cgaggccgtg aagcacccc 2880
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gggaagcttg ggaggtgtga gggccattag ctttccaagg gcgaaccctg ggaccgcctc 3240

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tg                                                                  3422


<210> 112
<211> 2290
<212> DNA
<213> Xenopus laevis

<220>
<221>
<222>
<223> n=a, c, g, or t

<400> 112
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gcagagcagg cactgaaaca cttaatggaa caagaaaaag taaaaggctt ttgccaagtg 120

gttgtggctc agaagttgaa agagggcctt tcacatctta tacagtcctg tggtcttgga 180

ggaatgaggc ataacactgt aatcatgagc tggccaagta gctggagaca gagtgatgac 240

tcacgggctt ggaaatcctt cattactacc attcgtgtga ccacagctgc acgccaagca 300

cttctggtag caaagaatgt atcctttttc cctggctccc gtgaaacatt agcagaaggg 360

cacattgatg tttggtggat agtacatgat gggggcatgc ttatgcttct gcccttcctt 420

ctaaaacaac acaaggtgtg gaggaagtgt aagatgcgta ttttcactgt ggctcagatg 480

gaagacaaca gtattcaaat gaaaaaggac ttggctacct ttctttatca tttacgtatc 540

gctgctgatg tggaagtagt ggagatgcat gacagtgata tatctgcata cacatatgaa 600

cgcacactca tgatggagca gagatcacaa atgctgagac aaatgcgtct ttctaaaaca 660

gatcgggagc gagaggctca gttggtgaag gacaggaatt caatcctgcg tttaaccagt 720

gtgggctctg atgatgatga agatacagag gctgccccag agagagtaca tatgacttgg 780
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gacctcctca acatacgacc ggaccagtca aatgttcggc gtatgcacac agctgtgaaa 900

cttaatgaag tcattgtgaa taaatcccat gatgccaaac tggtttttgct caacatgcca 960

ggaccccctc gtaaccctca gggtgatgaa aattatatgg agtttctaga ggttctgaca 1020

gagggcttgg agcgtgtgct ggtagtgaga ggaggtggaa cagaggtgat caccatttac 1080

tcgtaggcac gcatagagtg cattactcag gttgggggtt gtggaaacca atctgagaga 1140

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aagggagtca ccaaaatacc ctgtttaatg ccaaagggga gtgccatgaa tgcatttatt 1320

gtccaaagaa tcacaatcac ctctgactgg aaaaagactg aataagacat catgctgtga 1380

caatgtacat ctctatgcag cagtgctcct gccttttcaa taatgcttaa tgttctactc 1440

agctgaagat atccagatta tttaagacgt atctttggac aaactaatta ttcttaatta 1500

ataatataca aaattactgt atgcaaatag ctcagttttc atgaatgggt tcagagaact 1560

agccattgtt aagtcactga cccctactaa cttaagcaaa ttcacaagtt tgtgcatatt 1620

gttaagactc agctttatca gatcagactc ctgtctcctt ataacccact gaacaccaaa 1680

tagaacttct cttgttggcc acaaaaacct tgggtgttct aatgtattac attcctgtga 1740

aagtgaagcc tccttccttt ttttttttcat gcatgctgtc ctgattagaa ctgtgcatct 1800

ggcaattctt cagacangca ttgctggttg agactactag cccaaaagtc ttctcttagg 1860

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tgcagtttta tatccggaag ggatgggaac ccccactagt tttatttaaa tttgcactac 1980

gttttttttt ttaatacgac atgcaaattg agcaggtttt aatttattgt tcagtgcatc 2040

atgctatgtg tttgttcatt ctatgactgc tgtctctatt tctttgttgt attgctggat 2100

agagtagata ccnaaagtat tgaaactagc aatagctgca ttatagagaa gctgccttgt 2160

ntagcctgtt ttatggctgg caataaaagc ctttatgtct atgtcccctg tttgttgtgg 2220

aggatgggtt caaaactaca gaagaacaaa taaagtttta taagaaaaaa aaaaaaaaaa 2280

aaaaaaaaaa                                                       2290
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<210> 113
<211> 361
<212> PRT

<213> Xenopus laevis

<400> 113

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1				5					10					15	

Glu Ser Gln Ala Ala Glu Gln Ala Leu Lys His Leu Met Glu Gln Glu
          20   25   30

Lys Val Lys Gly Phe Cys Gln Val Val Val Ala Gln Lys Leu Lys Glu
          35   40   45

Gly Leu Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met Arg His
          50   55   60

Asn Thr Val Ile Met Ser Trp Pro Ser Ser Trp Arg Gln Ser Asp Asp
65   70   75   80

Ser Arg Ala Trp Lys Ser Phe Ile Thr Thr Ile Arg Val Thr Thr Ala
                   85   90   95

Ala Arg Gln Ala Leu Leu Val Ala Lys Asn Val Ser Phe Phe Pro Gly
          100   105   110

Ser Arg Glu Thr Leu Ala Glu Gly His Ile Asp Val Trp Trp Ile Val
          115   120   125

His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys Gln His
          130   135   140

Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
145   150   155   160

Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe Leu Tyr
                   165   170   175

His Leu Arg Ile Ala Ala Asp Val Glu Val Val Glu Met His Asp Ser
                   180   185   190

Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu Gln Arg
          195   200   205

Ser Gln Met Leu Arg Gln Met Arg Leu Ser Lys Thr Asp Arg Glu Arg
          210   215   220

Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Ile Leu Arg Leu Thr Ser
225   230   235   240

Val Gly Ser Asp Asp Asp Glu Asp Thr Glu Ala Ala Pro Glu Arg Val
                   245   250   255

His Met Thr Trp Thr Arg Asp Lys His His Ala Val Arg Val Ala Gln
                   260   265   270

Ser Lys Pro Met Pro Ser Cys Gln Asp Leu Leu Asn Ile Arg Pro Asp
          275   280   285

```
Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn Glu Val
    290                 295             300

Ile Val Asn Lys Ser His Asp Ala Lys Leu Val Leu Leu Asn Met Pro
305             310             315                 320

Gly Pro Pro Arg Asn Pro Gln Gly Asp Glu Asn Tyr Met Glu Phe Leu
            325             330                 335

Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Val Val Arg Gly Gly
            340             345             350

Gly Thr Glu Val Ile Thr Ile Tyr Ser
        355             360
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<210> 114
<211> 23
<212> DNA
<213> Homo sapiens

<400> 114
cagtccctcgttctaagacttcc   23

<210> 115
<211> 23
<212> DNA
<213> Homo sapiens

<400> 115
gtgtcttaaggagacaccacagc   23

<210> 116
<211> 19
<212> PRT
<213> mouse

<400> 116

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Lys Lys Ala Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly
  1             5                 10                 15

Asp Glu Tyr
```

<210> 117
<211> 18
<212> PRT
<213> mouse

<400> 117

```
Ala Glu Arg Thr Glu Glu Pro Glu Ser Pro Glu Ser Val Asp Gln Thr
  1             5                 10                 15
```

Ser Pro

<210> 118
<211> 84
<212> DNA
<213> homo sapiens

<400> 118
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gcgtgtgtgt gtgtgtgtgt gtgt   84

<210> 119
<211> 74
<212> DNA
<213> homo sapiens

<400> 119
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gtgtgtgtgt gtgt   74

<210> 120
<211> 94
<212> DNA
<213> homo sapiens

<400> 120
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<210> 121
<211> 92
<212> DNA
<213> homo sapiens

<400> 121
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<210> 122
<211> 72
<212> DNA
<213> homo sapiens

<400> 122
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gtgtgtgtgt gt   72

<210> 123
<211> 86
<212> DNA
<213> homo sapiens

<400> 123
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<210> 124
<211> 80
<212> DNA
<213> homo sapiens

<400> 124
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gtgtgtgtgt gtgtgtgtgt   80

<210> 125
<211> 80
<212> DNA
<213> homo sapiens

<400> 125
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gtgtgtgtgt gtgtgtgtgt   80

<210> 126
<211> 78
<212> DNA
<213> homo sapiens

<400> 126
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gtgtgtgtgt gtgtgtgt   78

<210> 127
<211> 76
<212> DNA
<213> homo sapiens

<400> 127
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<210> 128

<211> 78
<212> DNA
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gtgtgtgtgt gtgtgtgt   78

<210> 129
<211> 76
<212> DNA
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<400> 129
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gtgtgtgtgt gtgtgt   76

<210> 130
<211> 21
<212> DNA
<213> mouse

<400> 130
tccagaaccg tggacagcgc c   21

<210> 131
<211> 1530
<212> DNA
<213> mouse

<220>
<221>
<222>
<223> n=a,c, g, or t; sequence "nnnnn" comprises an undetermined number of
nucleotides

<400> 131
gaattctgct actcattggc tttgtgtgcc taggcagtac ttttctctct tgggagttca   60

gttttttttgt ttttgttttt ttcatttacg aaatgaaagc tatacgttag ataagatgaa   120

cagttctgtc cagcaattct ccagggattt ttgaggactc aagctgggaa ccagggtgac   180

tgtatagcta tttcctcttt ccattgctag tatgtttaga tctagatgca aagggtctaa   240

acctcaaatg tcactttctg aagcatctcc accattggcc caagtctggc ttcggggtcc   300

agggtaatca agctcctggg ggggtgctgg tttcagaaga ggaggacagg agagcatgtc   360

cggcctggaa gcctcagaaa gcaatcctgg attagaggat tagacattcc cgccccagga   420

gaaaatctgg tccccaaccg aggtggcctc attctcccct tccccactca cctggccagc   480

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tccccttgtc tgtggtgtgg actccagggt cttgtnnnnn gggccccgcc tgcgccagag      660

tggggggggc tgcgtctgct ctagggaagc gagggccgcg tcccccgcag catcccctcc      720

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cacgcctcct gcataacggt atgaggtgag cagcgcccgc tactgagagg gggcgcgcgc      900

gggtgtgagc gtgtgtccgt gtgcgagtgt gtgtgcgccg ggcgggcggg cactgcagct      960

tcttcctccg tggagcggag agcaagcgag agagctcgag caagcgagcg agcggagaag     1020

gcgggcagag gggcgcgggc gaagcggcgc agccatcccg agcccggcgc cgcgcagcca     1080

ccangctcaa caacctgacg gactgcgagg acggcgatgg gggagccaac cccggtaagc     1140

agtggtccgg gggcggcggg ggaggggta gcgaggagga aggaggagaa ggaggagaag      1200

gagaaggagg agggcagctt cggagtgggg ggcagagccg gggccgcctc ctgcagagga     1260

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aactgggggt tggaatgatc cacggcctgg gggcagactt ggattagcta aaccggagag     1440

gccgtgggaa ggggatgaaa tagctagaac agggctgacg tgctgttcga cgtgcaggag     1500

ggaggctcct ttccggagtt gggaccccac                                      1530
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